

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE 22 Jun. 99		3. REPORT TYPE AND DATES COVERED THESIS
4. TITLE AND SUBTITLE BREASTFEEDING EXPERIENCES OF STRONGLY COMMITTED WOMEN: CORRELATES OF MATERNAL SATISFACTION			5. FUNDING NUMBERS	
6. AUTHOR(S) MAJ NEFF MARIA K				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) MEDICAL UNIVERSITY OF SOUTH CAROLINA			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) THE DEPARTMENT OF THE AIR FORCE AFIT/CIA, BLDG 125 2950 P STREET WPAFB OH 45433			10. SPONSORING/MONITORING AGENCY REPORT NUMBER FY99-189	
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION AVAILABILITY STATEMENT Unlimited distribution In Accordance With AFI 35-205/AFIT Sup 1			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words)				
14. SUBJECT TERMS			15. NUMBER OF PAGES 134	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT		18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT

**BREASTFEEDING EXPERIENCES OF STRONGLY COMMITTED WOMEN:
CORRELATES OF MATERNAL SATISFACTION**

**BY
Maria Kristina Neff**

**Submitted in partial fulfillment of the requirements
For the Master of Science in Nursing Degree
in the College of Nursing
Medical University of South Carolina
May 1999**

DTIC QUALITY INSPECTED 2

19990805 070

DEDICATION

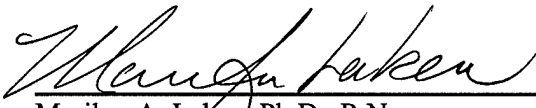
I want to express my heartfelt appreciation to those individuals who gave me encouragement and support during the process of completing this thesis. To my daughter Kristin Linnea Neff, the joy of my life; she has given me tremendous inspiration, motivation and enhanced my sense of determination. I wish for her the self-assurance and courage to strive for and acquire all of her goals and dreams. To my mother, Mona, and sister, Katrina; I sincerely thank them for their consistent support and faith in my abilities, and encouragement to make my dreams a reality. To all of my friends who offered positive words and the support I needed to finish this research, I thank you for making the process easier.

MEDICAL UNIVERSITY OF SOUTH CAROLINA

COLLEGE OF NURSING

THESIS APPROVAL FORM

The thesis "*Breastfeeding Experiences of Strongly Committed Women: Correlates of Maternal Satisfaction*," as submitted by Maria Kristina Neff has been approved on May 4, 1999, in partial fulfillment of the requirements for the Master of Science in Nursing degree.



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ACKNOWLEDGMENTS

I would like to express my deepest gratitude to Dr. Marilyn Laken, thesis chairperson, for her wonderful mentorship and support that made the completion of this thesis such a great learning experience. I would also like to extend special thanks to Dr. Karen Corbett, thesis committee, who provided me with outstanding insight, support and direction during the early stages of thesis development until completion. I would like to thank Linda Cole, thesis committee, for her expertise and guidance from a Nurse-Midwifery and Lactation Consultant perspective.

In addition to the thesis committee members, I would like to thank Dr. Yvonne Michel for her crucial, scholarly statistical assistance. I am grateful to George M. Campbell for his graphic support, creation of the computerized model of the conceptual framework, and editing and publishing skills. I would also like to extend thanks to Joan Ridgway for her administrative assistance. A sincere thank you to Dr. Dorothy Rentschler for permission to adapt and utilize the breastfeeding questionnaires from her dissertation, *The relationship between pregnant women's achievement, motivation, information about breastfeeding and success in breastfeeding*, 1986. I would like to express great appreciation to the nurses, supervisors and administrators of the two hospitals for their support of this study, and in particular; Patty Simon, Teresa Smoak, Tally Smyth, Starla Crisman and Pam Price. Finally, I would like to extend great appreciation to the mothers and newborns in the study; they made this study possible and made it such a rewarding experience.

ABSTRACT

Breast milk is clearly the superior infant nutrition for the first year of life. This fact is extensively supported by the literature. The purpose of this study was to assess the breastfeeding experiences of strongly committed women, and correlates of maternal satisfaction and duration. This pilot study utilized a quasi-experimental design; 17 subjects completed the study, women who had planned deliveries at 1 of 2 Southeastern United States hospitals. Subjects were assessed prenatally for demographic characteristics; at 1 and 8-weeks postpartum, for maternal satisfaction and breastfeeding duration. Data analysis revealed a negative correlation between newborn age at first breastfeeding and maternal satisfaction with RN breastfeeding assistance at that time. Maternal satisfaction at 1-week postpartum was positively correlated with satisfaction with RN breastfeeding assistance during the first 24-hours. A positive correlation was noted between length of time planned to breastfeed in the third trimester and 8-weeks postpartum.

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CHAPTER I

DESCRIPTION OF THE PROBLEM

Background

Support for Importance of Breastfeeding

Breast milk is clearly the superior infant nutrition over formula; breastmilk has a “distinct and irreplaceable value to the human infant” (Lawrence, 1997, p. 3). Dr. Ruth Lawrence stated that the unique composition of breastmilk is species specific and “provides the ideal nutrients for human brain growth in the first year of life” (1997, p. 3). The “value of human milk for the health and growth of the baby is undisputed” (Worthington-Roberts & Williams, 1997, p. 345). The Institute of Medicine’s 1991 Subcommittee on Nutrition during Lactation stated that “exclusive breastfeeding is the preferred method of feeding for normal full-term infants from birth to age 4 to 6 months” and further recommended “breastfeeding complemented by appropriate introduction of other foods for the remainder of the first year, or longer if desired” (p. 11). In December 1997, the American Academy of Pediatrics (AAP) stated in a Policy Statement that breastfeeding is the “ideal method of feeding and nurturing infants and recognizes breastfeeding as primary in achieving optimal infant and child health, growth and development” (p. 1036). The AAP additionally specifies that while exclusive breastfeeding is recommended for the first 6 months to foster optimal development and growth, breastfeeding is recommended for at least 12 months, and thereafter, for as long as desired (1997).

The U.S. Surgeon General’s Healthy People 2000 breastfeeding health objectives for the Nation include increasing initiation of breastfeeding in the early postpartum period to 75%, and increasing the duration of breastfeeding to 5 to 6 months to 50% (Spisak & Gross, 1991, p. xvii).

In the United States, nationally and regionally we are not meeting Healthy People 2000 national breastfeeding objectives.

The World Health Organization (WHO) and United Nations Children's Fund (UNICEF) produced a joint statement to facilitate protection, promotion and support of breast-feeding. They recommend that every facility providing maternity services should promote the following 10 steps to successful breast-feeding:

1. Have a written breast-feeding policy that is routinely communicated to all health care staff.
2. Train all health care staff in skills necessary to implement this policy.
3. Inform all pregnant women about the benefits and management of breast-feeding.
4. Help mothers initiate breast-feeding within a half-hour of birth.
5. Show mothers how to breast-feed, and how to maintain lactation even if they should be separated from their infants.
6. Give newborn infants no food or drink other than breast milk, unless medically indicated.
7. Practice rooming-in, allow mothers and infants to remain together, 24-hours a day.
8. Encourage breast-feeding on demand.
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breast-feeding infants.
10. Foster the establishment of breast-feeding support groups and refer mothers to them on discharge from the hospital or clinic.

The WHO/UNICEF statement and 10 steps serve the following two purposes: to clearly present the crucial role that health services play in protecting and promoting breast-feeding and to describe appropriate information and support that should be given to mothers.

Although human milk is endorsed as the preferred feeding for all infants by the Institute of Medicine, American Academy of Pediatrics, the U. S. Surgeon General, and WHO/UNICEF, breastfeeding rates are still lower than rates reported in the 1980s despite recent increases since

1990 (Gartner et al., 1997). A recent survey documented recent increases in both the initiation of breastfeeding and duration of breastfeeding at 6-months of age. Comparing rates from 1989 and 1995, the initiation of breastfeeding increased by 14% (from 52.2% to 59.7%); similarly there was a 19.3% increase in duration at 6 months (from 18.1% to 21.6%) (Ryan, 1997). According to Ryan, the greatest increases in initiation were found among groups that have historically been less likely to breastfeed: black, < 25 years of age, lowest income group (< \$10,000), no more than grade school educated, primiparous, living in the South Atlantic region of the U. S., women who had infants of low birth weight, employed full time outside the home, and women who participate in the Women, Infants and Children supplemental food program (1997). The greatest national increases in breastfeeding at 6 months (nearly twofold), was among women who were black, < 20 years, and employed full time outside the home (Ryan, 1997). Despite increased rates of initiation and duration of breastfeeding, not one region in the United States meets the national breastfeeding objectives.

In the South Atlantic region, the following rates were noted by characteristic; percentage breastfeeding in hospital, and percentage breastfeeding at 6 months: White: 62.5% and 22.2%, Black: 35.3% and 10.0%, WIC participant: 40.1% and 9.6%, and non-WIC participant: 70.0% and 27.4% (Ryan, 1997). The breastfeeding rates reported from a local Charleston community hospital were approximately 50% upon hospital discharge and at 6 months are unknown.

The Healthy People 2000 breastfeeding objective recommends a duration of breastfeeding of at least 5 to 6 months. Due to the time constraints of this study, a breastfeeding duration of 8-weeks, either full or high partial, will be considered a predictor for breastfeeding duration success (to approximately 5 - 6 months). An evaluation of current breastfeeding at 8-weeks should be an accurate predictor of successful, continued breastfeeding, based on studies by Eastham, Smith, Poole and Neligan, 1976; Samuels, Margen and Schoen, 1985; and Sloper,

McKean and Baum, 1975, (as cited by Rentschler, 1991), which concluded that the highest failures of breastfeeding occurred during the first 4 to 6-weeks. Janke (1997) similarly noted that 32% to 58% of breastfeeding women changed to bottle-feeding during the first 6-weeks postpartum. Based on this research, an evaluation of breastfeeding duration at 8-weeks should be a reasonable and good predictor of longer duration of breastfeeding, and potentially as long as 6 to 12 months.

*Support for the Importance of Facilitation of a Positive First Breastfeeding Experience
Sensitive Maternal Period Immediately After Birth*

Kennell, Trause and Klaus, in 1975, explored the literature and discovered evidence for a sensitive period in the human mother during the first minutes and hours after birth. Kennell et al. hypothesized that “there is a sensitive period in the human mother that is the optimal time of an affectional bond to develop between the mother and her infant” (1975, p. 94). The impact of the sensitive period on breastfeeding was summarized by Thomson, Hartsock and Larson, (1979), “the initial responsive period may be the ideal time for mother and newborn to learn how to feed at the breast” (p. 1374). A reported concern was related to the routine hospital practice of separating the mother from baby; this practice negatively impacted maternal-infant bonding and initiation of breastfeeding. Kennell et al. proposed that extra contact or separation during this sensitive period would alter the maternal attachment and behavior. This finding was supported by 6 out of 8 studies reviewed; the differences were still documented for up to 2 years after birth.

With verification of the sensitive period, Kennell et al. (1975) recommended changes in hospital care to promote mother-infant continuous contact after birth. Changes that would facilitate bonding and ultimately breastfeeding included: immediate skin-to-skin contact after birth, continuous skin-to-skin contact until a complete first breastfeeding occurs, and required

newborn care such as a physical examination and administration of medication conducted while the newborn is in the mother's arms. Ideally, mother and newborn would not be separated for several hours after birth, and any separations during the hospital stay would be minimized. Confirmation and understanding of the maternal sensitive period was an extremely important milestone to the science of breastfeeding and is of utmost significance to all practitioners facilitating successful breastfeeding.

Another remarkable aspect of the sensitive period is that of the imprinting effect of the earliest breastfeedings. Riordan reported that promoting a successful early breastfeeding encourages optimal newborn suckling patterns and has been positively associated with success in breastfeeding (1983). For the primipara, "the first several breastfeedings have an imprinting effect," health care providers should provide supportive breast-feeding instruction during the first breastfeedings to foster successful breastfeeding (Riordan, 1983, p. 45).

Extended Contact After Birth

In 1972 Klaus et al. reported that extended contact after birth resulted in positive bonding behaviors of mothers; they were reluctant to leave their newborn, made more eye-to-eye contact, and soothed and fondled their newborns more often. Similar to the 1972 Klaus et al. study, Kennell et al. in 1974 researched extended postpartum contact and realized it enhanced positive maternal behaviors such as soothing and kissing the newborn; these effects were noted to persist at 1 year postpartum. Perez-Escamilla, Pollitt, Lonnerday and Dewey (1994) performed a meta-analysis of seven studies evaluating early contact; they found a significant correlation of early contact on duration of breastfeeding of 2 to 3 months among primiparas.

Importance of Unlimited Nursing in the Early Postpartum Period

The single intervention of unlimited nursing with correct positioning can strongly influence the success of initiation and duration of breastfeeding. A review presented by L'Esperance and

Frantz in 1985 explored one aspect that impacts breastfeeding: the common practice of limiting the time mothers feed their newborns per breast per feeding. The review of the literature produced eight studies that demonstrated no relationship between nipple pain and unlimited nursing with correct position at the breast; 6 studies specifically supported the promotion of unlimited nursing in the early postpartum period. Additionally, the WHO/UNICEF joint statement on promotion of breastfeeding states that “close mother-child contact immediately following birth and frequent sucking at the breast are the best stimulus for milk secretion,” (p. 6, 1989).

The importance of unrestricted duration of breastfeedings were further impressed by Howie, et al. (1981) whose research supported the recommendation that the duration of a breastfeed be determined by the infant’s response, not by an arbitrary time schedule. Howie, et al. (1981), discovered that in newborns at days 5 to 7 after birth, the nutritive feeding (rapid flow of milk) time period was 15 minutes or less in 75% of feedings, and that the remainder of the feedings involved nonnutritive suckling (minimal flow of milk). They proposed that nonnutritive suckling reflected smaller volumes taken at the end of the feeding of the calorie and fat rich hind milk, which may be of great significance to the baby, and may also be of importance to satisfy the suckling need, possibly playing a role in initiating and promoting maternal-infant attachment. Howie et al. (1981), also reported that it is unnecessary to waken babies (who appear content and have fallen asleep) just because the suckling time at the breast was short because a previous study showed that the extra time at the breast resulted in sore and cracked nipples.

Enhanced Suckling Pressures 1 to 2 hours After Birth

Suction (generation of negative pressure in the oral cavity) and expression (stripping milk from the nipple with the tongue/positive pressure) suckling pressures in normal and low birth weight infants during the first hour after birth were evaluated by Ellison, Vidyasagar and

Anderson (1979). They reported that some newborns exerted high suction pressures at 5 minutes of life, while the majority of newborns, especially those of normal birth weight exhibited increased suction pressures at 60-minutes of life. It was also determined that mean pressures of both normal and low birth weight newborns increased with time, which they attributed to either suckling experience, or physiological stability.

Further confirmation of the importance of early suckling was provided by Anderson, McBride, Dahm, Ellis and Vidyasagar (1982), who investigated sucking response to determine the optimum time for initiation of breastfeeding. They discovered that the mean suction (negative pressure) peaked at 90 minutes postbirth, the expression (positive pressure) peaked at 15 minutes postbirth and remained steady until 120 minutes postbirth (Anderson, et al., 1982). These pressures closely approximated the pressures assessed in newborns on days 1 and 2 postbirth. To encourage successful breastfeeding, the authors recommend that stable newborns begin breastfeeding within the first 1 to 2 hours after birth.

Other researchers also realized the importance of successful early suckling. Chute (1992) stressed that although initial latch-on may take several minutes, once breastfeeding is initiated, "sucking usually is sustained in a way that may not be duplicated for 2 or 3 days" (p. 572). Additionally, Chute mentioned the significant imprinting effect of the first suckling experience, which promoted future successful breastfeeding experiences (1992). Kron, Stein and Goddard's study (as cited by Medoff-Cooper & Ray, 1995, p. 198) noted that "several factors modify sucking rhythms... prior sucking experience and feeding intervals affect sucking." Riordan (1983) stated that the newborn's suckling response was the strongest within the first 20 to 30 minutes after delivery; delaying this reflex could make it much more difficult for the baby to learn the suckling process later on. The importance of encouraging suckling, immediately after delivery and for up to 1 to 2 hours after delivery is critical to the success of breastfeeding.

High Newborn Arousal Immediately After Birth

Emde, Swedberg, and Suzuki in 1975 assessed newborn wakefulness and discovered a 39 minute period of high arousal immediately after birth. They also determined that mothers who received medications during labor had newborns with decreased periods of wakefulness. In Desmond, Rudolph and Phitaksphraiwan's study (as cited in Klaus & Kennell, 1976, p. 66) they found that the newborn is in a quiet alert state during 45 to 60 minutes of the first hour after birth. These two studies provide very strong support for encouraging breastfeeding immediately postpartum.

Prolactin Receptor Theory and Importance of Early, Unlimited Feedings

De Carvalho et al. (1983) proposed that frequent and early breastfeeding during initial lactation stimulates a faster increase in milk production by stimulating the development of receptors to the mammary gland. Riordan and Auerbach, citing De Carvalho stated that there is a "window of opportunity" in early lactation, in which infant sucking during early and frequent feedings stimulates the number of Prolactin receptors (essentially 'sets' a number of receptors dependent on the initial stimulation of milk production) and remains constant later in the lactation period (once the number of receptors is 'set', no more develop) (pp. 88, 93, 1993).

The Prolactin receptor theory is supported by animal studies in which suckling stimulated the development of Prolactin receptors in the mammary gland; the number of receptors per cell increased in early lactation and remained constant thereafter (Hinds & Tyndale-Biscoe, 1982; Lincoln & Renfree, 1981; and Sernia & Tyndale-Biscoe, 1979; as cited by De Carvalho et al., 1983). Further support of this theory is provided by the De Carvalho et al. (1983) study in which frequent feedings in the experimental group stimulated an early increase in Prolactin receptors in the breast, which resulted in greater milk output on postpartum day 15, as compared to milk output in control mothers.

Early, Correct Suckling Technique and Early Contact

The following studies assessed the importance of suckling technique and timing in relation to success of breastfeeding initiation and duration. The significance of early, frequent and unlimited suckling and positive impact on duration of breastfeeding is supported by the following studies. Taylor, Maloni, and Brown in 1986 studied early suckling and early contact and noted an increased duration of breastfeeding of 8.5 months compared to the early contact/no early suckling group duration of 4 months. Salariya, Easton, and Cater (1978) discovered immediate postpartum suckling, and frequent feedings (every 2 hours) resulted in more successful breastfeeding; additionally, initiation of lactation occurred 24-hours earlier than in the every 4 hour feeding group. Slaven and Harvey (1981) reported that unlimited suckling at each feed improved breastfeeding duration by 6-weeks postpartum at 80% compared to 57% found in the restricted feedings group. Slaven and Harvey did not find a significant difference in nipple discomfort between the two groups. Additionally, De Carvalho, Robertson & Klaus (1984) validated that frequent and unrestricted breastfeeding in early lactation was not associated with increased nipple discomfort; an unrestricted feeding group fed an average of 10 feedings per day compared with the restricted feeding group, and there was not a significant difference of nipple soreness.

Correct suckling technique resulted in duration of breastfeeding of 74% at 4 months compared to 40% in a faulty suckling group (Righard & Alade, 1992). Unrestricted duration of breastfeedings were impressed by Howie, et al. (1981) who recommended that the duration of a breastfeeding be determined by the infant's response, not by an arbitrary time schedule. They recommended that mothers be instructed that newborns are highly individual, and that breastfeeding intervals and duration of feedings should be individualized according to the responses of their newborns.

Ellis (1992) reported that an early first breastfeeding is positively associated with longer duration of breastfeeding. Ellis noted that if there is a delay of newborn suckling, it not only ignores the newborns natural reflex, but it delays nipple stimulation and subsequent release of hormones essential to establishment of lactation (1992). Johnson further confirmed the importance of an early first breastfeeding (within the first hour after delivery) on the duration of breastfeeding as compared with a delayed breastfeeding of 16 hours postpartum or later. Johnson stated that satisfying first breastfeeding experiences act as a reinforcer for later breastfeedings. Numerous factors have been identified that directly promote a satisfying breastfeeding experience during the immediate postpartum period and influence duration of breastfeeding: high newborn arousal period, higher suckling pressures, sensitive period, Prolactin receptor theory; all of which can be enhanced by early unlimited suckling, correct positioning, and extended skin-to-skin contact in the immediate postpartum period.

Support for Fostering the Optimal First Breastfeeding Period

The investigator proposes that there is an "optimal breastfeeding period," the first 2 hours after birth, in which all the previous factors stated potentiate the opportunity for a positive first breastfeeding experience. The maternal sensitive period after delivery, early and continuous contact, early correct suckling technique, early unlimited breastfeeding, heightened newborn suckling ability, high newborn arousal period and stimulation of Prolactin receptors in early lactation; all have been well established in the literature and all foster a positive initial breastfeeding experience. The investigator proposes that a prolonged period of nursing (over 40 minutes of nursing) in the early postpartum period (during the first 1 to 2 hours after delivery) will facilitate a positive breastfeeding experience that will promote greater maternal satisfaction and increase breastfeeding duration at 8-weeks. Additionally, this intervention may enhance maternal-infant interaction, promote an optimum learning opportunity, "imprinting" for proper

suckling and positioning technique and may 'set' a greater number of Prolactin receptors that will thus significantly enhance future breastfeeding experiences.

Medical Ecological Conceptual Framework

Medical anthropology is the study of human health in both developed and nondeveloped populations, in a cultural and environmental context. Medical ecology is a new approach in the field of medical anthropology in which health and disease are seen as indicators of the ecological relationships within a population. Medical ecology regards health as a measure of how well a population is adapted to its environment (McElroy & Townsend, 1985). Breastfeeding contributes to infant and maternal health.

A medical ecological framework will be adapted to study the first breastfeeding experience and breastfeeding duration in the mother-infant dyad. The environment that influences the mother-newborn dyad is comprised of three components: the physical, biotic (or biological), and cultural environments. These three components continuously interact and are interdependent; changes in one generally cause a change in another. When one component changes significantly, it may create such an imbalance in that part that it leads to ecological or physiological imbalances. When the imbalance is severe, it may lead to stress or disease (McElroy & Townsend, 1985). Similarly, a severe imbalance in one of the environmental components could adversely influence the breastfeeding relationship, and potentially lead to stress or disease of mother or newborn. See Figure 1, Medical Ecological Conceptual Framework, for a visual representation of the medical ecological perspective.

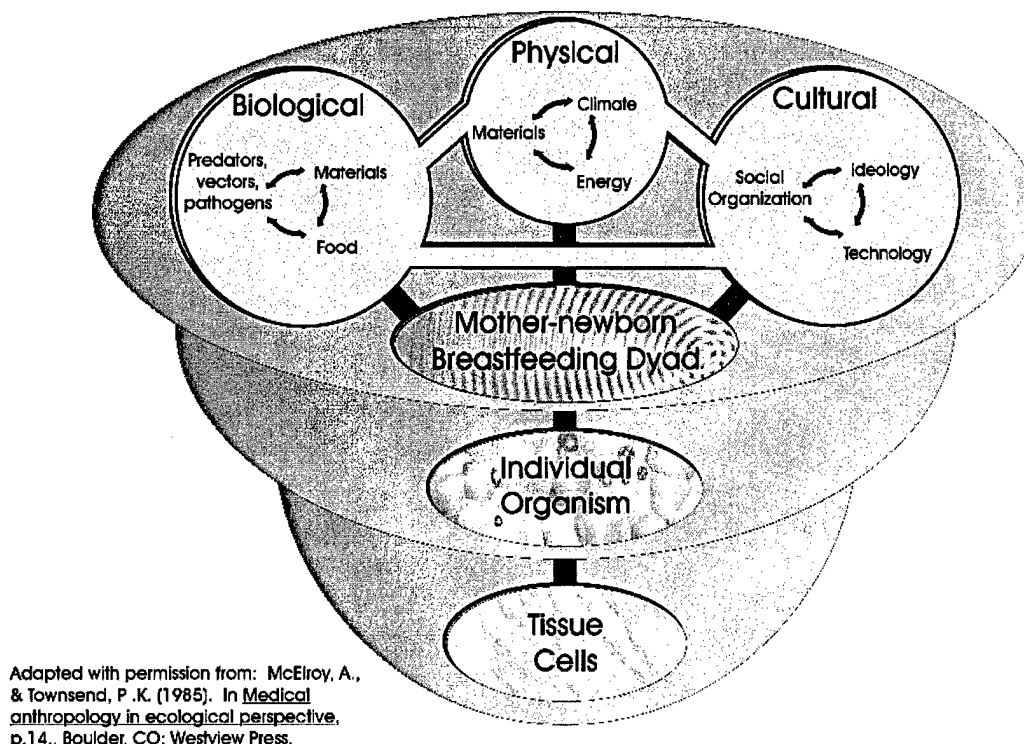


Figure 1. Medical Ecological Conceptual Framework

The environment influencing the first breastfeeding experience of the mother-newborn dyad consists of influences from the physical, biological and cultural environments. A brief explanation of influential environmental factors specific to the mother-infant breastfeeding dyad will be discussed here; a comprehensive evaluation of all factors influencing breastfeeding will be presented in the review of the literature. In this study, the medical ecological framework will guide the study of the prolonged first breastfeeding on maternal satisfaction with and duration of breastfeeding up to 8-weeks postpartum.

The Physical Environment

The physical environment consists of climate, materials and energy. Physical environmental factors related to climate that effect the first breastfeeding includes: skin-to-skin contact of

mother and newborn (DeChateau & Wiberg, 1977), and extended/continuous maternal-newborn contact (Klaus et al., 1972). Physical factors related to energy include breastfeeding interaction and proximity: breastfeeding immediately after birth (Taylor, Maloni & Brown, 1986), frequent and unrestricted breastfeeding (Slaven & Harvey, 1981; De Carvalho, Robertson & Klaus, 1984) and correct latch-on/positioning (Righard & Alade, 1992).

Other physical components related to energy that affect breastfeeding postpartum include proximity and feelings. Close proximity of the mother to baby significantly enhances the breastfeeding relationship, since this fosters the mother's ability to observe and respond to infant cues of hunger. The proximity of co-sleeping mothers and newborns encourages breastfeeding interaction; infants actively position themselves to facilitate nursing (McKenna & Mosko (1993) as cited in Stuart-Macadam & Dettwyler, 1995). Another aspect of energy, mothers' feelings about breastfeeding, has been shown to impact the breastfeeding relationship postpartum. Mothers' satisfaction/emotions related to satisfaction with the first breastfeeding experience (Johnson, 1976) and later breastfeeding experiences (Wright & Walker, 1983), and the degree to which mothers' felt anxiety, fatigue, stress or motivation have been found to influence breastfeeding interaction (Sjolin, Hofvander, & Hillervik; 1977). Physical components involving materials include the use of an apparatus such as a sling that keeps the newborn in close physical contact with the mother.

The Biological Environment

The biological environment includes materials; predators, vectors, and pathogens; and food. Biological components related to materials that influence the first breastfeeding includes: maternal labor anesthesia/analgesia, which affects the newborn's ability to suckle (Righard & Alade, 1990), and physiological stability of mother and newborn which is the outcome of physiological events occurring during the childbirth process.

The Cultural Environment

The cultural environment includes ideology, technology and social organization. Helman defines culture as a set of guidelines, both formal and informal, that individuals acquire as members of a particular society or community (1990). These guidelines tell individuals "how to view the world, how to experience it emotionally, and how to behave in it in relation to other people, to supernatural forces or gods, and to the natural environment" (Helman, 1990, pp. 2-3).

The cultural component of ideology is best described as the method or manner of thinking or believing characteristic of a group, class, or individual. Cultural components related to ideology that influence the first breastfeeding includes: prenatal instructions or advice given by family and friends (Hally et al., 1984) and health care providers (Dermer; 1998). Other factors related to ideology indicate cultural/class influences: if mother had been breastfed herself in infancy (Sloper, McKean & Baum; 1975); if decision to breastfeed was made prior to pregnancy (Goodine & Fried, 1984), or by the third trimester (Coreil & Murphy, 1988). Ideological factors of higher socioeconomic status of both parents, and higher maternal educational level influence breastfeeding; these factors are also the result of social organization (Dusdieker, Booth, Seals, & Ekwo; 1985).

Cultural components related to social organization that influence breastfeeding include: the father's presence at birth (Tamminen, Verronen, Saarikoski, Goransson, & Tuomiranta; 1983) and fathers preference for breastfeeding (Bloom, Goldbloom, & Stevens; 1982). Cultural components associated with social organization or family that influence breastfeeding later in the postpartum period include: formula/liquid supplements (Ryan, Wyson, Martinez, & Simon, 1990), pacifier use (Righard & Alade, 1992), mother's return to work (Bloom, Goldbloom, Robinson, & Stevens; 1982) and maternal perception of inadequate milk supply (Sjolin, Hofvander & Hillervik, 1977).

Cultural components associated with technology are hospital practices/protocols that influence the first breastfeeding and include: maternal-infant separation after delivery (Kennell, Trause & Klaus, 1975); and professional breastfeeding assistance (Riordan, 1983). Technological hospital factors that impact the breastfeeding relationship after the immediate postpartum period include: rooming-in (Bloom, Goldbloom, Robinson, & Stevens; 1982); formula/liquid supplements (Ellis, 1992); pacifier use (Righard & Alade, 1992); early hospital discharge (Waldenstrom, as cited by Kvist et al., 1996); and formula discharge packages (Ryan et al., 1990).

This study will not evaluate physiological factors of mother and newborn that increase the potential for a successful first breastfeeding; however, these factors will be described briefly. Utilizing the medical ecological framework to study physiological factors at the tissue/cell level reveals that both mother and newborn are uniquely adapted to secure a successful first breastfeeding interaction. Maternal physiological factors include: increased Prolactin receptor stimulation with early breastfeeding stimulation that results in a faster increase in milk production (De Carvalho, Robertson, Friedman, & Klaus; 1983), and the maternal sensitive period immediately after birth that enhances bonding and breastfeeding interaction (Kennell, Trause & Klaus, 1975). Newborn physiological factors include: a heightened arousal period immediately postpartum that offers greater alertness, and thus, greater ability to breastfeed (Emde, Swedberg, & Suzuki, 1975), increased newborn suckling pressures in the immediate postpartum period which fosters greater suckling ability (Ellison, Vidyasagar & Anderson, 1979), and the imprinting effect of the first suckling experience which facilitates future effective suckling (Riordan, 1983).

Conceptual Summary

The mother-infant breastfeeding dyad is clearly influenced by numerous environmental cultural, biological and physical factors. This study will examine the influence of (a prolonged)

first breastfeeding experience on maternal satisfaction and duration of breastfeeding postpartum.

“Breastfeeding is simultaneously biologically and culturally constructed, deeply embedded in social relations and yet cannot be understood without reference to varying levels of analysis including individual, household, community, institutional, and world industrial capitalism.”

(Stuart-Macadam & Dettwyler, 1995, p. 163). Factors that either positively or negatively impact breastfeeding must be clearly understood to formulate interventions that optimally promote the breastfeeding relationship.

Purpose of the Study

The purpose of this research study is to ascertain whether a prolonged first breastfeeding facilitates a positive experience that increases maternal satisfaction with breastfeeding, initially and at 8-weeks, and whether this also increases the duration of full and high partial breastfeeding at 8-weeks postpartum.

The investigator developed the idea for this study based on clinical experience. While working as an obstetrical nurse, the investigator encouraged mothers to nurse their newborns immediately after delivery; as long as the neonate was positioned correctly, the mother could nurse her newborn indefinitely, a concept known as unrestricted breastfeeding. Over time, the investigator noted that mothers who breastfed their newborns for 40 minutes or more immediately after delivery were more successful with initiation of breastfeeding than other breastfeeding mothers, and rarely reported difficulties. As a pattern emerged of greater success of breastfeeding associated with a longer first breastfeeding, the length of time recommended by the investigator evolved to 40 to 60 minutes immediately after delivery. The investigator consistently noted successful initiation of breastfeeding, maternal verbalization of feeling comfortable with breastfeeding, and rare reports of difficulties. With the advent of the shorter hospital stays,

feeling comfortable with breastfeeding prior to discharge is of paramount importance. The investigator decided to pursue this experience of clinical success by conducting a research study to evaluate whether or not this intervention makes a significant long-term impact on maternal satisfaction and duration of breastfeeding.

An extensive review of the literature revealed no research involving a prolonged first breastfeeding. As previously mentioned, the literature supports unrestricted or unlimited breastfeeding without attention to time spent at the breast. A prolonged first breastfeeding is an extension of the concept of unrestricted breastfeeding to encourage a lengthy, mutually satisfying and successful first breastfeeding.

Research Questions

1. What percentage of mother/newborn dyads are able to breastfeed 40 minutes or more immediately after birth (within first 1 to 2 hours)?
2. What are reasons that women are not able to breastfeed for this length of time?
3. Is a prolonged first breastfeeding positively correlated with an increased duration of full and high partial breastfeeding at 8-weeks postpartum?
4. Is a prolonged first breastfeeding positively correlated with a maternal perception of satisfaction with first breastfeeding and at 8-weeks?

Exploratory Questions

1. Is prenatal commitment to breastfeed positively correlated with duration of breastfeeding?
2. Is pacifier use correlated to duration of breastfeeding?

Conceptual Definitions

Maternal Satisfaction

Mother's satisfaction with the breastfeeding experience (were the desired, expected outcomes achieved). Satisfaction will be defined as a score from the questionnaire of extremely satisfied,

strongly satisfied or satisfied. The following aspects of the breastfeeding experience are evaluated: within the first week; mother's satisfaction with the first breastfeeding experience, and ease of breastfeeding; at 8-weeks postpartum; mother's satisfaction with the breastfeeding experience, ease of breastfeeding, would mother breastfeed another child, and would she recommend breastfeeding to a friend.

Maternal Commitment

Mother's commitment to breastfeeding (deliberate decision or plan for breastfeeding); evaluated by category (amount of breastfeedings per day) and duration of breastfeeding. Commitment will be evaluated by comparison of prenatal commitment to postpartum duration, type of category. Questionnaire evaluates prenatally when mother made the commitment, mother's strength of commitment to breastfeed, and how long she plans to breastfeed; compared to postpartum evaluation of duration and category within first week postpartum, and at 8-weeks.

Duration Success

Defined as mothers full (exclusively and almost exclusively) and partially (high, over 80% of feedings are breastfeedings) breastfeeding their newborns at 8-weeks postpartum.

Rationale for duration success.

According to the literature, there is no uniform definition for successful duration of breastfeeding; studies report success based on duration of 8-weeks to over 9 months. The American Academy of Pediatrics, Surgeon General and the World Health Organization recommend a duration of breastfeeding of at least 6 months, however, due to the time constraints of this study; breastfeeding duration either full or high partial at 8-weeks will be considered successful. An evaluation of current breastfeeding at 8-weeks should be an accurate predictor of successful, continued breastfeeding, based on studies by Eastham, Smith, Poole & Neligan, 1976; Samuels, Margen & Schoen, 1985; and Sloper, McKean & Baum, 1975, (as cited by Rentschler,

1991), which concluded that the highest failures of breastfeeding occurred during the first 4 to 6-weeks postpartum. Janke (1997) similarly noted that 32 to 58% of breastfeeding women changed to bottle feeding during the first 6-weeks postpartum. Based on previous research, an evaluation of breastfeeding duration at 8-weeks should be a reasonable and good predictor of continued breastfeeding for up to 6 months or more).

Breastfeeding Categories

Full Breastfeeding

Full breastfeeding categories include both 'exclusive' no other liquid or solid given to infant; and 'almost exclusive' vitamins, minerals, water, juice, & rare ritualistic feeds given.

Partial Breastfeeding

Partial breastfeeding categories include 'high' more than 80% of feeds are breastfeeds; 'medium' 20 to 80% of feeds are breastfeeds; and 'low' less than 20% of feeds are breastfeeds.

Token Breastfeeding

Token breastfeeding is described as minimal, occasional, or irregular breastfeeds, and is utilized primarily for child consoling or comfort and not primarily for nutritive purposes. It is not recommended to include this category in research describing "breastfeeding" women.

Full Formula Feeding

Full formula feeding describes 100% formula feeding of the newborn.

Rationale for breastfeeding categories.

Based on recommendations by the 28 April 1988 Interagency Group for Action on Breastfeeding, the investigator utilized the standardized breastfeeding definitions which are based on fertility consequences of the different categories from two studies (Gray et al., 1990; and Eslami, 1987) cited in the Labbock and Krasovec article (1990). In utilizing this schema, enhanced clarification of breastfeeding categories will promote a clear evaluation of duration of

breastfeeding in the investigator's intervention study. Consistency and validity of breastfeeding definitions will increase comparability of data collected from different regions and countries, improve communication between programs, promote accurate interpretations and conclusions by policymakers and enhance usefulness of research presentations (Labbok & Krasovec, 1990). Additionally, *The Journal of Nurse-Midwifery* endorses use of this schema for breastfeeding definitions.

Operational Definitions

Nullipara

A woman that has not carried a pregnancy to the point of viability.

Primipara

A woman who has carried one pregnancy to the point of viability.

Multipara

A woman who has carried two or more pregnancies to the point of viability.

First Breastfeeding

The first breastfeeding after birth, usually over the first 1 to 2 hours after birth.

Spontaneous Vaginal Delivery (SVD)

Delivery in which the woman delivers her newborn vaginally independently, without any mechanical assistance.

Assisted Vaginal Delivery (AVD)

Delivery in which the woman delivers her newborn with mechanical assistance (use of forceps or vacuum extraction).

Term Delivery

Delivery of a newborn at 37-weeks or greater gestational age.

Stable Newborn

Newborn assessed by APGAR scoring system for heart rate, respiratory effort, muscle tone, reflex irritability and color; newborns with a 5-minute APGAR of 7 or above considered stable. Nurse's assessment may override stability assessment of APGAR score related to respiratory distress, etc.; patient stability assessed by nurse.

Stable Mother Postpartum

Mother with stable vital signs, stable postpartum status without complications. Nurse's assessment may override initial stable assessment; patient stability assessed by nurse.

Non-Inverted Nipples

Inverted nipples retract and may present difficulties at the first breastfeedings. Study requires women with everted, or protruding nipples that usually have no difficulty with breastfeeding.

CHAPTER II

REVIEW OF THE LITERATURE

Factors Influencing Successful Initiation and Duration of Breastfeeding

Many factors thought to influence initiation and duration of breastfeeding have been evaluated in clinical research studies. Research articles were reviewed that described the following influential factors: aspects of suckling technique or timing, early suckling pressures, importance of immediate contact after birth; assessment of factors that influence initiation and duration of breastfeeding: maternal characteristics, prenatal factors, postpartum/hospital factors, and postpartum/home factors. A medical ecological framework was adapted to study the factors affecting the first breastfeeding experience and duration in the mother/infant dyad. The environmental influences are comprised of three components: physical, biotic (or biological) and cultural environments.

The Physical Environment

The physical environment is comprised of climate, materials and energy. Physical environmental factors related to the climate that affect the first breastfeeding includes: extended contact after birth, specifically skin-to-skin, and continuous contact of mother and newborn. Physical factors related to energy immediately after birth includes correct suckling technique, early contact, the sensitive period, high newborn arousal, enhanced suckling pressures, enhancement of Prolactin receptors, and unrestricted breastfeedings.

Extended Contact After Birth

In 1972 Klaus et al. reported that extended contact after birth resulted in positive bonding behaviors of mothers; they were reluctant to leave their newborn, made more eye-to-eye contact,

and soothed and fondled their newborns more often. Similar to the 1972 Klaus et al. study, Kennell et al. in 1974 researched extended postpartum contact and realized it enhanced positive maternal behaviors such as soothing and kissing the newborn; these effects were noted to persist at 1 year postpartum. Perez-Escamilla, Pollitt, Lonnerday & Dewey (1994) performed a meta-analysis of 7 studies evaluating early contact; they found a significant correlation of early contact on duration of breastfeeding of 2 to 3 months among primiparas.

Importance of Skin Contact on Early Breastfeeding

The importance of skin contact on early breastfeeding success was carefully researched. DeChateau and Wiberg (1977) tested extra 15-20 minute skin-to-skin contact and immediate suckling after birth; they realized a 58% duration of breastfeeding at 3 months compared to 26% in the control group. Further support was provided by Thomson, Hartsock and Larson (1979) who validated that skin-to-skin contact immediately after birth for the first 15-20 minutes or at least until accomplishment of the first breastfeeding influenced successful duration of breastfeeding at 2 months. Similarly, in 1990, Righard and Alade evaluated uninterrupted contact during the first hour after birth until the first breastfeed; these newborns experienced a significantly higher level of correct suckling technique, a factor crucial to effective breastfeeding. An incidental finding by Righard and Alade was that most newborns whose mothers received labor medications did not suck at all. Similarly, heavy doses of anesthesia during the labor and delivery period are known to discourage breastfeeding (Rodriguez-Garcia & Schaefer, 1991).

Continuous Contact After Birth

With verification of the sensitive period Kennell et al. (1974) recommended changes in hospital care to promote mother-infant continuous contact after birth. Changes that would facilitate bonding and ultimately breastfeeding included: immediate skin-to-skin contact after birth, continuous skin-to-skin contact until a complete first breastfeeding occurs, and required

newborn care such as a physical examination and administration of medication conducted while the newborn is in mother's arms. Ideally, mother and newborn would not be separated for several hours after birth, and any separations during the hospital stay would be minimized. Confirmation and understanding of the maternal sensitive period was an extremely important milestone to the science of breastfeeding and is of utmost significance to all practitioners facilitating successful breastfeeding.

Correct Suckling Technique and Early Contact

The following studies assessed the importance of suckling technique and timing in relation to success of breastfeeding initiation and duration. Taylor, Maloni, and Brown in 1986 studied early suckling and early contact and noted an increased duration of breastfeeding of 8.5 months compared to the early contact/no early suckling group duration of 4 months. Salariya, Easton, and Cater (1978) discovered immediate postpartum suckling, and frequent feedings (every 2 hours) resulted in more successful breastfeeding; additionally, initiation of lactation occurred 24-hours earlier than in the every 4 hour feeding group. Slaven and Harvey (1981) reported that unlimited suckling at each feed improved breastfeeding duration by 6-weeks postpartum at 80% compared to 57% found in the restricted feedings group. Slaven and Harvey did not find a significant difference in nipple discomfort between the two groups. Additionally, De Carvalho, Robertson & Klaus (1984) validated that frequent and unrestricted breastfeeding in early lactation was not associated with increased nipple discomfort; an unrestricted feeding group fed an average of 10 feedings per day compared to the restricted feeding group, there was not a significant difference of nipple soreness. Correct suckling technique resulted in duration of breastfeeding of 74% at 4 months compared to 40% in a faulty suckling group (Righard & Alade, 1992).

Early First Breastfeeding

Ellis (1992) reported that an early first breastfeeding is positively associated with longer duration of breastfeeding. Ellis noted that if there is a delay of newborn suckling, it not only ignored the newborns natural reflex, but it delayed nipple stimulation and subsequent release of hormones essential to establishment of lactation (1992). Johnson (1976) further confirmed the importance of an early first breastfeeding (within the first hour after delivery) on the duration of breastfeeding as compared to a delayed breastfeeding of 16 hours postpartum or later. Johnson stated that the "initial satisfying breast-feeding experience acted as a reinforcer for subsequent feeding" (p. 15). Numerous factors have been identified that directly promote a satisfying breastfeeding experience during the immediate postpartum period and influence duration of breastfeeding: high newborn arousal period, higher suckling pressures, sensitive period, Prolactin receptor theory; all of which can be enhanced by early unlimited suckling, correct positioning, and extended skin-to-skin contact in the immediate postpartum period.

The Sensitive Period Immediately After Birth

Several articles specifically investigated the relation of immediate contact after birth to positive maternal bonding, affectional behaviors, and ultimately breastfeeding success. Sosa, Kennell, Klaus, and Urrutia (1976) studied maternal behavior after birth and determined that human mothers display species-specific behavior at the first contact with their neonates. This behavior was characterized by an en-face position that encouraged eye-to-eye contact which was significant to development of maternal affectional behavior.

Kennell, Trause and Klaus, in 1975, explored the literature and discovered evidence for a sensitive period in the human mother during the first minutes and hours after birth. Kennell et al. hypothesized that "there is a sensitive period in the human mother which is the optimal time of an affectional bond to develop between the mother and her infant" (1975, p. 94). The impact of the

sensitive period on breastfeeding was summarized by Thomson, Hartsock and Larson, (1979), "the initial responsive period may be the ideal time for mother and newborn to learn how to feed at the breast" (p. 1374). A related concern was the routine hospital practice of separating mother from baby; this practice negatively impacted maternal-infant bonding and initiation of breastfeeding. Kennell et al. proposed that extra contact or separation during this sensitive period would alter the maternal attachment and behavior. This finding was supported by 6 out of 8 studies reviewed; the differences were still documented for up to 2 years after birth.

Another remarkable aspect of the sensitive period is that of the imprinting effect of the earliest breastfeedings. Riordan reported that promoting a successful early breastfeeding encourages optimal newborn suckling patterns and has been positively associated with success in breastfeeding (1983). For the primigravida, "the first several breastfeedings have an imprinting effect"; health care providers should provide supportive breast-feeding instruction during the first breastfeedings to foster successful breastfeeding (Riordan, 1983, p. 45).

High Newborn Arousal Immediately After Birth

Emde, Swedberg, and Suzuki in 1975 assessed newborn wakefulness and discovered a 39 minute period of high arousal immediately after birth. They also determined that mothers who received medications during labor had newborns with decreased periods of wakefulness. In Desmond, Rudolph and Phitaksphraiwan's study (as cited in Klaus & Kennell, 1976, p. 66) they found that the newborn is in a quiet alert state during 45 to 60 minutes of the first hour after birth. These two studies provide very strong support for encouraging breastfeeding immediately postpartum.

Enhanced Suckling Pressures 1 to 2 hours After Birth

Suction (generation of negative pressure in the oral cavity) and expression (stripping milk from the nipple with the tongue) suckling pressures in normal and low birth weight infants during

the first hour after birth were evaluated by Ellison, Vidyasagar and Anderson (1979). They reported that some newborns exerted high suction pressures at 5-minutes of life, while the majority of newborns, especially those of normal birth weight exhibited increased suction pressures at 60-minutes of life. It was also determined that mean pressures of both normal and low birth weight newborns increased with time, which they attributed to either suckling experience, or physiological stability.

Further confirmation of the importance of early suckling was provided by Anderson, McBride, Dahm, Ellis and Vidyasagar (1982), who investigated sucking response to determine the optimum time for initiation of breastfeeding. They discovered that the mean suction (negative pressure) peaked at 90 minutes postbirth, the expression (positive pressure) peaked at 15 minutes postbirth and remained steady until 120 minutes postbirth (Anderson et al., 1982). These pressures closely approximated the pressures assessed in newborns on days 1 and 2 postbirth. To encourage successful breastfeeding, the authors recommended that stable newborns begin breastfeeding within 1 to 2 hours after birth.

Other researchers also realized the importance of successful early suckling. Chute (1992) stressed that although the initial latch-on may take several minutes, once breastfeeding is initiated, "sucking usually is sustained in a way that may not be duplicated for 2 or 3 days" (p. 572). Additionally, Chute mentioned the significant imprinting effect of the first suckling experience, which promoted future successful breastfeeding experiences (1992). Kron, Stein, and Goddard's study (as cited by Medoff-Cooper & Ray, 1995, p. 198) noted that "several factors modify sucking rhythms...prior sucking experience and feeding intervals affect sucking." Riordan (1983) stated that the newborn's suckling response was the strongest within the first 20 to 30 minutes after delivery; delaying this reflex could make it much more difficult for the baby

to learn the suckling process later on. The importance of encouraging suckling, immediately after delivery and for up to 1 to 2 hours after delivery is critical to the success of breastfeeding.

Prolactin Receptor Theory and Importance of Early, Unlimited Feedings

De Carvalho et al. (1983) proposed that frequent and early breastfeeding during initial lactation stimulates a faster increase in milk production by stimulating the development of receptors to the mammary gland. Riordan and Auerbach, citing De Carvalho stated that there is a "window of opportunity" in early lactation, in which infant sucking immediately after birth and frequent feedings stimulates the number of Prolactin receptors (essentially 'sets' a number of receptors dependent on the initial stimulation of milk production) and remains constant later in the lactation period (once the number of receptors is 'set', no more develop) (pp. 88, 93, 1993).

The De Carvalho et al. 1983 study also lends support to the theory; frequent feedings in the experimental group stimulated an early increase in Prolactin receptors in the breast, which resulted in greater milk output on postpartum day 15, as compared to milk output in control mothers. This theory is also supported by animal studies in which suckling stimulated the development of Prolactin receptors; the number of receptors per cell in the mammary gland increased in early lactation and remained constant thereafter (Lincoln & Renfree, 1981; Sernia & Tyndale-Biscoe, 1979; and Hinds & Tyndale-Biscoe, 1982; as cited by De Carvalho et al., 1983).

Unrestricted Breastfeedings

Unrestricted duration of breastfeedings was impressed by Howie et al. (1981) who recommended that the duration of a breastfeeding be determined by the infant's response, not by an arbitrary time schedule. Howie, et al., discovered that in newborns at days 5 to 7 after birth, that nutritive feeding (rapid flow of milk) times was 15 minutes or less in 75% of feedings, and that the remainder of feedings involved nonnutritive suckling (minimal flow of milk). The authors stated that nonnutritive suckling reflected smaller volumes taken at the end of the feeding of the

calorie and fat rich hind milk, which may be of great significance to the baby and may also be of importance to satisfy the suckling need, possibly playing a role in initiating and promoting maternal-infant attachment. Howie et al., reported that it is unnecessary to waken babies (who appear content and have fallen asleep) just because the suckling time at the breast was short because a previous study showed that the extra time at the breast resulted in sore and cracked nipples. They recommended that mothers be instructed that newborns are highly individual, and that breastfeeding intervals and duration of feedings should be individualized according to the responses of their newborns.

The Biological Environment

The biological environment includes materials; predators, vectors and pathogens; and food. Biological components related to materials that influence the first breastfeeding includes: maternal labor anesthesia/analgesia, which alters the newborn's ability to suckle, as well as physiological stability of mother and newborn (not addressed in this review).

Maternal Anesthesia/Analgesia

Righard and Alade (1990) evaluated uninterrupted contact during the first hour of birth until the first breastfeeding. They found that those newborns whose mothers were anesthesia/medication free showed a significantly higher level of correct suckling technique; newborns whose mothers received labor medications did not suck at all.

The Cultural Environment

The cultural environment includes ideology, technology and social organization. A culture offers a set of guidelines, both formal and informal, that individuals acquire as members of a particular society. These guidelines tell individuals in the society how to see the world, how to act in relation to other people, and the natural environment (Helman, 1990).

The Cultural Ideological Environment

Cultural components related to ideology that influence the first breastfeeding include: prenatal advice given by family and friends or health care providers. A factor related to cultural/class influences is when the decision to breastfeed was made. Additionally, ideological factors of education, socioeconomic status, marital status, age and parity may bear positive or negative influences on breastfeeding.

Breastfeeding Instruction/Advice

Hally et al. (1984) determined that women who received positive breastfeeding advice from family and friends achieved successful duration of breastfeeding; this finding was confirmed by other studies (Sloper et al., 1975; Wright & Walker, 1983). Positive discussions with the patient's midwife or health care provider also promoted greater success with breastfeeding (Dermer, 1998; Ryan et al., 1990; Wright & Walker, 1983). Additional prenatal factors involving patient education included childbirth and breastfeeding classes, and preparation of breasts for breastfeeding. Attendance at childbirth classes and breastfeeding classes positively influenced duration of breastfeeding (Bloom et al., 1982). Eastham, Smith, Poole and Neligan (1976) also highlighted technical knowledge of breastfeeding as a significant factor with direct impact on duration of breastfeeding.

Prenatal Breastfeeding Decision

In 1984, Goodine and Fried discovered that the decision to breastfeed before pregnancy facilitated a duration of 9.5 months; a decision made during pregnancy facilitated only 7.9 months duration. Further supporting this correlation was Hally et al., (1984) who realized that 75% of women adhered to breastfeeding if they decided on this feeding method prior to pregnancy, which correlated with successful duration of breastfeeding. Additionally, Coreil and Murphy (1988) found that a third trimester decision of intended duration of breastfeeding was the

strongest predictor of actual duration. Also looking at characteristics of the mother, Sloper, McKean and Baum in 1975 reported a longer duration of breastfeeding in mothers who had been breastfed in infancy.

Professional Breastfeeding Advice

According to Gartner and Stone (1994), the earliest western writings that provided guidance on breastfeeding were by Soranus of Ephesus, a second-century Roman physician; he recommended that infants should not be fed milk for the first few days after birth, and that mother's milk is unfit for the child's consumption for the first 20 days. This ancient idea that initially the mother's milk is harmful or unfit has permeated medical thought over time; it has caused delays, to be described, in the initiation of breastfeeding which has ultimately negatively influenced breastfeeding duration even in the 20th century.

England, 1700s.

In England, during the 1700s, breastfeeding advice encouraged delaying the first milk feed for 3 days, and then endorsed use of a wet-nurse for initiation of breastfeeding for the first weeks. In 1750, the radical English physician William Cadogan wrote *Essay Upon Nursing* which contradicted current medical thought by advising that nature never intended the child to fast, nor should the biological mother be prevented from feeding her child. Cadogan recommended a "natural and rapid onset of nursing by the biological mother" after birth (Gartner & Stone, 1994, p. 534).

United States, 1900s.

In the 1900s it was recommended that all healthy women nurse their children, at least during the initial postpartum period (Lusk, 1901). Lusk recommended that the child should be nursed after the mother has rested, but at least within the first 12 hours after birth. He commented that if the newborn suckles immediately after birth, that the child nurses eagerly and the mother also

benefits by enhanced uterine contractions and involution. The delay in nursing is still advocated for the mother to rest, despite the knowledge that newborns offered early breastfeeding would suckle eagerly. Lusk also mentioned that during the first days of breastfeeding, "no rule can be laid down with regard to the frequency with which it should be placed to the breast" (1901, p. 255). The value of early, unrestricted and frequent nursing was acknowledged; it was also stated that later the newborn would settle into a routine.

United States, 1930s.

Medical instruction in the 1930s emphasized that the first breastfeeding occurs at 12 to 18 hours after delivery; in addition, the newborn should not nurse more frequently than every 12 hours for the first 2 or 3 days, and not suckle longer than 3 to 5 minutes per feeding (Zabriskie, 1937). Zabriskie states that after the third day, milk replaces colostrum in the breasts, which have usually become engorged; the newborn is then nursed regularly every 3 or 4 hours for 15-20 minutes, alternating breasts (1937). Despite knowledge acquired by the 1930s, professional breastfeeding interventions are interfering with establishment of lactation by initiation of a greater delay of the first breastfeeding, and regimented infrequent short-term nursing until the third day of life.

United States, 1940s.

By the 1940s it was determined that it was the physician's duty to insist that every woman attempt to nurse her child since breast milk was considered the ideal newborn food (Stander, 1945). Delay of breastfeeding initiation is somewhat shortened; Stander advised that women start nursing at 12 hours postpartum. Stander also encouraged a regimented feeding schedule, "experience has shown that most infants thrive best when fed at intervals of 4 hours"... "if necessary the child should be awakened from a sound sleep at stated times to take its nourishment, for only by this means can its habits be made regular" (1945, p. 470). It was

advised that the infant nurse for only 5 minutes at each breast per feeding for the first 4-days; once the mother's milk was in, the baby was permitted to nurse up to 20 minutes, alternating breasts.

In the 1900s, the value of an early first breastfeeding was noted and encouraged after delivery or at least by 12 hours postpartum and unrestricted, frequent nursing was the rule. More than 40 years later, medical advice returned again to past thinking by delaying the first breastfeeding to no earlier than 12 hours postpartum, and regulating the frequency and length of breastfeeding. Additionally Stander mentions that the newborn should not be allowed to fall asleep at his/her mother's breast, nor should the infant be rocked or fondled after feeding, but should be placed into her/his crib to encourage sleep. A formula supplement is encouraged after the fifth or sixth week for at least 1 feeding per day, even if there is adequate milk supply, to decrease the tedium of nursing for the mother, and thereby ensure prolonged duration of nursing.

United States, 1950s.

The 1950s saw a continued delay prior to start of the first breastfeeding: initiation should occur at 12 to 24-hours after delivery, so the mother is fully recovered from anesthesia (Speert & Guttmacher, 1956). As described by Speert and Guttmacher, the infant is permitted not more than 10 minutes on each breast, to be repeated at either regular 4 hour intervals or at the infant's demand, according to preference of the patient and physician (1956). Delayed initiation of breastfeeding and strict scheduled frequency of nursing during this period reverted even further to outdated philosophy; however, progression in medical thinking is apparent with the view of unrestricted, infant led nursing as a legitimate, advantageous method of nursing.

United States, 1970s.

For the first time, in the 1970s the first breastfeeding is encouraged immediately after delivery (or if not possible immediately, at least within the first few hours after birth) to stimulate

lactation and induce uterine contractions to prevent postpartum hemorrhage (Applebaum, 1975). Applebaum also described a common practice identified that seriously impeded lactation: withholding of breastfeedings for 24-hours because of the rare possibility of tracheo-esophageal fistula (1975). After the initial feeding, it was recommended that the infant be placed on a 3 hour feeding schedule to include night feedings, a practice which “conforms to the more natural emptying time of the infant’ s stomach” (Applebaum, 1975, p. 106). Additionally, length of time spent at both breasts per feeding is dictated as follows: 5 minutes on each breast the first day, 10 minutes per breast the second day, and 15 minutes per breast the third day. Although in the 1970s immediate initiation of breastfeeding after delivery is encouraged, some hospitals still practiced unjustified withholding of breastfeeding for 24-hours. Again, strict 3 hour feedings are reinforced with staggered times at both breasts until the third day.

United States, 1980s.

In the 1980s, the practice of mothers nursing their newborn immediately after delivery was advocated to enhance milk production and maternal-infant bonding. It was stated that although breastfed newborns usually desired nursing every 2 to 3 hours initially, most hospitals established a rigid 4 hour feeding schedule. Rooming-in allowed the mother to feed her newborn as needed, and if not available, flexible nursery policies would allow the mother to nurse her newborn when hungry (Olds, London, Ladewig, & Davidson, 1980). Olds, et al. stated that once the nursing mother was at home a general breastfeeding routine was adopted that was agreeable to both mother and baby (1980). The 1980s promoted initiation of breastfeeding immediately after birth, but did not encourage an unrestricted breastfeeding schedule—the mother seemed to adopt this once at home.

United States, 1990s.

The 1990s reinforced the importance of initiation of breastfeeding immediately after birth. "Allowing the infant to nurse in its wakeful period immediately after birth when the mouthing movements and rooting reflex are active will give the mother confidence and promote milk production and letdown" (Gabbe, 1996, p. 698). Early suckling was reported to enhance successful breastfeeding; Gabbe reinforced that hospital routines should not interfere with reasonable breastfeeding practices (1996).

Despite numerous research studies promoting unlimited, and unrestricted breastfeeding to foster successful breastfeeding, in the late 1990's the practice of restricting breastfeedings lingers. As early as the 1980s, articles were published that denounced restricted, timed feedings (previously done to prevent nipple soreness) and firmly supported unlimited suckling at the breast. Slaven and Harvey (1981) reported that unlimited suckling at each feeding improved breastfeeding duration by 6-weeks postpartum at 80% compared to 57% found in the restricted feedings group. Slaven and Harvey did not find a significant difference in nipple discomfort between the two groups. Additionally, Carvalho, Robertson & Klaus (1984) validated that frequent and unrestricted breastfeeding in early lactation was associated with breastfeeding success; an unrestricted feeding group fed an average of 10 feedings per day compared to 7.4 feedings per day in the restricted feeding group, and there was no significant difference of nipple soreness.

Unfortunately, although these research studies provided sufficient documentation for unrestricted, infant-led nursing, the 1996 Gabbe Obstetrical text recommends limited suckling: 5 minutes per breast per feeding the first day, 10 minutes per breast the second day and 15 minutes or more per breast thereafter. Regimented knowledge/routines are hard to overcome, even with replicated research proving the benefits of changing the current practice.

Impact of professional breastfeeding advice.

Over the years, medical and nursing breastfeeding advice has had tremendous influence over the successful initiation and duration of breastfeeding. Assisting new mothers with initiation of lactation is crucial to mother-infant dyad's success with the breastfeeding relationship (Minchin, 1989; Riordan, 1983). Once there is full support of initiation of first breastfeeding immediately after delivery and unrestricted, infant-led breastfeeding routines thereafter, we may finally foster breastfeeding rates at discharge and at 6 months in accordance with Healthy People 2000 national breastfeeding objectives.

Maternal Characteristics

Multiple factors have been investigated for influence on breastfeeding and include maternal characteristics, prenatal factors, postpartum/hospital factors, and postpartum/home factors. Maternal characteristics that positively influenced duration of breastfeeding, according to O'Campo, Faden, Gielen and Wang in 1992, included anticipated length of breastfeeding, maternal confidence, support by others, exposure to breastfeeding role models, and the mother's belief that breastfeeding was the best for mother and baby.

Education, socioeconomic level and marital status.

Educational level, income level and marital status were postulated to have some connection to breastfeeding incidence and duration. Higher education levels were determined to enhance incidence and duration of breastfeeding in several studies (Ryan et al., 1990; Sjolín et al., 1977; Wright & Walker, 1983). This finding was not replicated by Kirk (1990), who found no connection to maternal education level but to socioeconomic level of the father of the baby. In fact, four studies detected the significance of socioeconomic status. Sloper, McKean and Baum, 1975; Wright and Walker; Ryan et. al., and Sjolín et al., found that successful duration was associated with a higher socioeconomic class. Dusdieker, Booth, Seals and Ekwo (1985) found

initiation of breastfeeding was positively correlated with both higher education and socioeconomic status of both parents, although maternal education was the best predictor. Married or cohabitating status of the mother positively affected breastfeeding in a study reported by Sjolín et al. (1977).

Maternal age.

The characteristic of maternal age over 25-years was found to be influential to successful breastfeeding duration in several studies (Dusdieker, Booth, Seals, & Ekwo, 1985; Ryan, Wysong, Martinez, & Simon, 1990; Sjolín, Hofvander & Hillervik, 1977; Wright & Walker, 1983). Bloom, Goldbloom and Stevens (1982) also discovered initiation of breastfeeding to be associated with an average maternal age of 27-years. Similarly Tamminen, Verronen, Saarikoski, Goransson and Tuomiranta (1972) found an increased incidence and duration of breastfeeding in mothers aged 21-38 years.

Maternal parity.

Parity was an indicator thought to affect breastfeeding success, particularly if the mother had prior breastfeeding experience. Bloom, Goldbloom, Robinson and Stevens (1982) and Ryan et al. (1990), stated that multiparity was positively correlated with duration of breastfeeding. Conversely, Kirk (1976) found primiparity more significantly linked to increased incidence (81%) and duration (49%) of breastfeeding compared to multiparity values of 53% and 22% respectively. A related study by Thoman, Leiderman and Olson (1972) found that for primiparas, the length in weeks that the mothers breastfed their infants was positively correlated to the amount of time the mothers talked to their infants at the 2-day feeding observation.

The Cultural Social Organization Environment

Cultural components related to social organization that influences early breastfeedings includes father's presence at birth, fathers preference for breastfeeding, and hospital routines of

formula supplementation. Social organizational components reflecting family and cultural values that influence later breastfeeding includes: hazardous use of formula supplements, pacifier use, maternal smoking, maternal perceptions influencing breastfeeding, and maternal influences and low-birth-weight newborns.

Father's Influence: Presence and Preference

In two related studies, two factors that facilitated successful duration of breastfeeding included the presence of the father of the baby during the birth (Tamminen et al., 1972) and a husband's preference for breastfeeding (Bloom et al., 1982).

Cultural Hazards: Formula

Exclusive breastfeeding is recommended for the first 6 months of life, it is recommended for the full first year and beyond in addition to semisolid foods (Institute of Medicine, American Academy of Pediatrics, the U. S. Surgeon General, and WHO/UNICEF). Breastfeeding additionally provides crucial nonnutritional benefits: breast milk has anti-infective and anti-allergic properties, enhances psychosocial interaction between mother and baby and provides a contraceptive effect (Jelliffe, & Jelliffe, 1978).

A decline in breastfeeding started 300 years ago when affluent women hired wet nurses to breastfeed their children. These wet nurses often gave up their own newborns to foundling hospitals, where they were fed a diet of cereal or flour cooked in water (dry-nursing), many of them died (McElroy & Townsend, 1985). In France, foundlings started on wet nursing within their first week of life still had a mortality rate of 33.7% in their first year. (Jelliffe & Jelliffe, 1978). The mortality of dry-nursed infants was 53.9% compared to 19.2% for those infants breastfed (Jelliffe & Jelliffe, 1978). These findings prompted medical and lay personnel of the time to recommend maternal breastfeeding over wet nursing and dry-nursing. The dry-nursing diet was an initial attempt of artificial feeding.

Utilizing cows' milk for infant formula has become commonplace in this last century, due to availability of dried and canned milk and support of medical personnel and the industry (McElroy & Townsend, 1985). However, despite the superior technology available today, formula does not compare to the biological superiority of human breastmilk for human newborns. "The message that bottle-feeding is the modern, high-status way to feed an infant has been transmitted by advertising and by health personnel" (McElroy & Townsend, 1985, p. 226). This cultural message is quite devastating to the promotion of breastfeeding and ultimately newborn health, especially in nondeveloped populations.

Hospital practices influenced by formula availability inadvertently interfere with breastfeeding promotion. Hospital administration acceptance of free formula products from formula companies negatively influences breastfeeding: free formula, professional staff literature and gifts, formula company endorsed patient educational material, and breastfeeding patient discharge packages containing formula. Other situations frequently encountered that adversely impact breastfeeding includes: nursing staff tendencies to offer the mother a night's sleep in which the newborn is given supplements of formula or glucose water, pacifier use, and over-concern or over-reaction to newborn hypoglycemia or physiological jaundice and resultant instant formula feeds given instead of breastfeeds. When hospital administrators and professional staff fully support the World Health Organization's *Ten Steps to Successful Breastfeeding*, the above negative factors would be significantly decreased or eliminated and successful breastfeeding would be effectively facilitated.

Maternal Smoking

The most significant negative maternal factor noted was smoking status of the mother. Smoking mothers usually breastfed for a duration of 5.2 months, women who stopped smoking in third trimester had a duration of 8.9 months and nonsmokers' usually breastfed for 9.12 months.

Formula and Pacifier Use At Home

Negative factors involving the later postpartum period were identified. Righard and Alade (1992) identified a negative relationship of pacifier use; using a pacifier for over 2 hours per day increased breastfeeding problems. Ryan et al. (1990) realized that when mothers returned to work by 6 months, maternal employment usually negatively impacted breastfeeding, and most often resulted in formula supplementation.

Maternal Perceptions Influencing Breastfeeding

Perceptions promoting early cessation of breastfeeding included perception that their milk dried up (66%), fear that the newborn was not getting enough milk (17%), anxiety of all kinds, lack of motivation, stress, tiredness and working outside the home (Sjolin et al., 1977). Bloom et al. (1982) found that cessation in the first 1 to 6-weeks was usually related to the maternal perception of an inadequate milk supply; cessation from 3 to 6 months usually related to returning to work.

Maternal Influences and Low-Birth-Weight Newborns

Sjolin et al. in 1977 found negative factors affecting breastfeeding reported by mothers included the mother feeling ill, previous unpleasant experience with breastfeeding, and delivery of low birth-weight infants. Ryan et al. (1990) and Goodine and Fried (1984) noted that women who had low birth-weight babies were more likely to feed their newborn formula in addition to breastfeeding. Tamminen et al. (1972) similarly noted a decrease in the incidence of breastfeeding in infants with low birth weight, infants delivered by cesarean section or assisted delivery (forceps or vacuum extraction), and infants asphyxiated at birth; however, the duration was unchanged.

The Cultural Technology Environment

Cultural components associated with technology are hospital practices and policies that influence the first breastfeeding and include: maternal infant separation after delivery (addressed under physical environment); professional breastfeeding assistance (discussed previously, cultural ideology); rooming-in, hospital formula/liquid supplements, formula discharge packages, early hospital discharge, and professional postpartum breastfeeding support.

Rooming-In

Bloom et al. in 1982 found that immediate contact, early breastfeeding and rooming-in significantly impacted duration; mothers experiencing these factors nursed their infants 17-weeks versus 7-weeks noted in the control group. Among primiparas, rooming-in was associated with higher rates of exclusive breastfeeding at 1-week postpartum; if breastfeeding guidance was provided as well, higher exclusive breastfeeding rates were noted at 4 months postpartum, (Perez-Escamilla, Pollitt, Lonnerdal & Dewey, 1994).

Hospital Formula/Liquid Supplementation

Some negative influences such as formula supplementation occur in-hospital as a matter of hospital policy. Many hospitals have nursery policies that require routine mother-infant separation for routine procedures such as physical examination and medication administration. These practices frequently occur during the early postpartum period and negatively impact success of breastfeeding. To offer mothers an opportunity to sleep, nursing personnel offer to monitor newborns, oftentimes, this results in supplementing the newborn with formula instead of waking mother (Ellis, 1992). Supplementation with liquids other than breast milk has been found to impact breast-feeding negatively. Goodine and Fried (1984) noted that when formula or glucose supplementation was provided to newborns, duration decreased from 9.8 months to 7.3 months.

Sloper et al. (1975) stated that complete cessation of hospital formula supplementation increased duration of breastfeeding at 4 months from 27% to 37%. Hally et al. (1984) also noted a trend of more successful duration if fewer hospital formula feeds were given. This trend was significant if breastfeeding was offered on demand to the newborn, not on a schedule.

Formula Discharge Gift Packages

Ryan et al. (1990) explored the impact formula gift packages had on breastfeeding duration. They found a 10% chance that the mother would change from exclusive breastfeeding (only breastfeeding) to partial breastfeeding (breastfeeding plus feeding formula) with receipt of formula at discharge. Perez-Escamilla, Pollitt, Lonnerdal & Dewey (1994), confirmed after meta-analysis of 6 studies, that commercial discharge formula packs are linked to poor lactation success, especially among vulnerable subgroups such as primiparas.

A recent study by Dungy, Losch, Russell, Romitti, and Dusdieker (1997), showed that formula discharge packages had no negative effect on exclusive or partial breastfeeding at 4 months postpartum. However, generalizability of the study findings should be limited because of dropout of participants from a vulnerable population—women who had lower socioeconomic status and less education. The study findings revealed that women in this study were less vulnerable to negative effects of formula discharge packages on duration of breastfeeding than women in previous studies; a reason postulated is that of increased emphasis on benefits of breastfeeding by the media. In another study, discharge formula packages increased the rate of introduction of formula supplementation at 6-weeks postpartum; whereas receipt of discharge breast pumps prolonged full breastfeeding by 6-weeks postpartum (Bliss, Wilkie, Acredolo, Berman, & Tebb, 1997).

Early Hospital Discharge

With the current concerns over health care cost control, the industry has shifted to earlier postpartum discharges. Several studies have addressed concerns of early discharge impact on breastfeeding success. A review of postpartum early discharge outcomes, from 1960 to 1986, by Norr and Nacion (1987) showed that discharge prior to 48-hours was not associated with a significant increase in morbidity in any of 10 studies reviewed. However, Norr and Nacion stated that a study by Jansson (1985) revealed that 61 out of 925 infants had problems associated with inadequate breastfeeding after early discharge. Overall, the 1987 review of studies concluded that programs providing extensive prenatal preparation and postpartum follow-up for primarily advantaged populations shows no adverse effect from early discharges (Norr & Nacion).

Recently, O'Leary Quinn, Koepsell, and Haller, (1997) specifically investigated shortened hospital stays in relation to successful breastfeeding; they reported no difference in breastfeeding duration at 6 to 8-weeks in mothers who had a 24 or 48-hour length of hospital stay postpartum. Janke (1997) quoted a study (Carty & Bradley, 1990) in which no relation is found between breastfeeding duration and shortened length of hospital stay. A Swedish study by Kvist, Persson and Lingman evaluated breastfeeding duration after early hospital discharge, defined as discharge between hours 6 to 72 postpartum. The early discharge group was self-selected; no significant differences were found with this group in frequency or duration of breast feeding as compared to the traditional hospital care group (1996). However, Waldenstrom's study, (as cited by Kvist et al., 1996) reported that 63% of early discharge multiparas versus 46% of longer stay multiparas were breast feeding at 6 months post delivery; there was no significant difference in breastfeeding duration among primiparas. From research accomplished to date, there appears to be no significant negative impact of early postpartum discharge on breastfeeding duration. It is

however, important to note the significance of prenatal breastfeeding preparation and postpartum follow-up support to facilitate success in breastfeeding.

Professional Postpartum Breastfeeding Support

Factors noted later in the postpartum period at home that impacted duration of breastfeeding included use of an instructional booklet, maternal enjoyment of the breastfeeding experience, maternal employment and perceptions promoting early cessation. Enjoyment of the experience was found to be a promoter of successful breastfeeding; this finding was supported by Wright and Walker (1983), and Sjolín et al. (1977). Curro, Lanni, Scipione, Grimaldi and Mastroiacovo (1997) utilized a breastfeeding instructional booklet to increase duration. The breastfeeding material was presented by the health care provider and sent home with the patient; it did not positively influence duration as was expected despite the fact that 82% of the mothers felt that it was useful.

Summary of Factors Promoting a Successful First Breastfeeding

The environmental factors influencing the incidence and duration of breastfeeding are numerous and varied. Practitioners play a critical role in promoting positive factors and identifying and minimizing factors that negatively influence initiation of breastfeeding and duration. In many cases, hospital policy must be addressed when it negatively influences the breastfeeding relationship. Physical environmental factors such as early uninterrupted contact, preferably skin-to-skin, for 1 to 2 hours or at least until the first breastfeeding is accomplished will significantly enhance success of the first breastfeeding (initiation). The success of breastfeeding duration can be enhanced by facilitation of a successful first breastfeeding immediately after birth, during the first 1 to 2 hours during which suckling pressures are greatest, prolonged early contact, and frequent feedings with correct technique. Maternal drug use during labor decreases the newborn's wakeful periods after birth and decreases the suckling urge; this

decreases the potential for successful breastfeeding. Control of negative cultural environmental influences will support a longer duration of breastfeeding. Negative cultural technology factors that need to be improved to support breastfeeding, by hospital policy revision include: routine maternal-infant separation after birth, professional (RN) breastfeeding assistance, hospital formula/liquid supplementation, formula discharge packages, and early discharge policies that ensure adequate breastfeeding at discharge.

CHAPTER III

METHODS

Introduction

This chapter provides a description of the study design, the setting, the population and description of the sample utilized for this study. The current practice characteristics and philosophy of each hospital in relation to promotion of the first breastfeeding are described. The power analysis accomplished and sample size recommended is detailed. The research procedures employed, instruments used to acquire data, and limitations are addressed.

Study Design

Overview

This was a pilot study utilizing a quasi-experimental design with natural groups. Participants delivering at two Southeastern United States medical centers were evaluated. The group that delivered at Hospital 'A' will be considered Group 'A'; the group of patients that delivered at Hospital 'B' will be considered Group 'B.'

Description of Setting/Subjects/Population

The setting of the research study sample for Hospital 'A' is in a small community in South Carolina of 25,000 population that is a suburb of Charleston. The community has one medical center, located within 5 miles of the town. The setting of the sample for Hospital 'B' is a town in South Carolina, a community of 78,000 population that is also considered a suburb of Charleston. Women that attend several clinics in the area deliver at these two Medical Centers; approximately

65% are insured with private insurance, and 35% utilize public funding. The sample size required based on best estimates and power analysis, is 34 subjects for each group, 68 subjects total.

The convenience sample was targeted by attendance at either the monthly breastfeeding or childbirth classes that were offered to the Medical Center patients. To participate in the study, the subjects were required to meet the following inclusion criteria: attendance of breastfeeding class at 1 of the 2 Medical Centers, delivery at 1 of the 2 medical centers, 18 years of age or older; nullipara, primipara or multipara planning to breastfeed for the first time (no previous breastfeeding experience); SVD (Spontaneous Vaginal Delivery) or AVD (Assisted Vaginal Delivery) (no cesarean delivery); term delivery: 37 plus weeks; newborn stable with an APGAR of 7 or above at 5 minutes; and mother stable with noninverted nipples.

Current Practice

Current Practice at Hospital 'A'

The current nursing staff at Hospital 'A' was clearly very supportive of breastfeeding, breastfeeding is a top priority, other patient care priorities were accomplished around the breastfeeding schedule. After delivery, mothers were encouraged to breastfeed their newborns for an unlimited amount of time, a concept of unrestricted nursing or "prolonged nursing." Mothers were offered guidance/assistance by nursing staff that had received training on breastfeeding. One of the nurses who had worked at the hospital for 4-years was a certified lactation consultant, and offered assistance and instruction to staff and patients.

The nursery nurse attended each delivery, so both the obstetrical and nursery nurses were available to assist the mother initially after delivery. The nurses encouraged unrestricted first breastfeeding and minutes at the breast were not recorded. The first breastfeeding was assessed according to a subjective assessment of how the baby nursed at the breast: well/fair/poorly. There was no priority to take the baby to the nursery, unless the newborn was unstable. Hospital 'A'

had rooms set up so the patient remained in the same room for labor & delivery, recovery after delivery and the postpartum period. Physical examinations and medication administration were accomplished with the baby in mother's room. The amount of time mothers breastfed their newborns after delivery was unknown. The current breastfeeding rate at hospital discharge was approximately 50%; the rate was unknown after delivery.

Current Practice at Hospital 'B'

The current nursing support of breastfeeding at hospital 'B' reflects very "traditional" and outdated thinking in relation to breastfeeding; other priorities tended to take precedence over promotion of the first breastfeeding. After delivery, mothers were encouraged to breastfeed their newborns; they were offered guidance/assistance by nursing staff. The nurses evaluated the first breastfeeding according to a subjective assessment of how the baby nursed at the breast: well/fair/poorly; the feeding was not evaluated by time spent at the breast. The approximate time newborns nursed at the breast after delivery was about 5 minutes at each breast.

At 1 hour after delivery the newborn was taken to the nursery in accordance with hospital policy to meet standards for timely medication administration and a thorough physical evaluation. The newborn usually remained in the nursery for approximately 2 hours. Hospital 'B' had rooms set up so the patient remained in the same room for labor & delivery and stayed there until 1 hour after delivery; then the patient was moved to another room for the postpartum period. As a result of this move, the patient had two different staff members (labor and delivery, and postpartum) to assist her during the early postpartum period; this prevented continuity of care at this critical time when initiating breastfeeding. It is thought that mothers breastfeed their newborns for approximately 5 minutes per breast for the first breastfeeding. The current breastfeeding rate at hospital discharge is 50%; the rate is unknown after delivery.

A breastfeeding improvement team had been initiated to increase breastfeeding rates and duration at both Hospital 'A' and 'B.' Currently both hospitals had the same breastfeeding philosophy documented in a joint Breastfeeding Policy, Standards of Patient Care, and Strategic Policy; all documents avidly supported breastfeeding. In comparison of practice at both hospitals it was apparent that Hospital 'A' embraced the supportive breastfeeding policies while Hospital 'B' had not been able to fully incorporate the policies into patient care.

Although specific breastfeeding rates after discharge from both hospitals were not available, a study by Ryan provided statistics for the south Atlantic region. In the south Atlantic region, the following rates were noted by characteristic, percentage breastfeeding in hospital, and percentage breastfeeding at 6 months: white: 62.5% and 22.2%, black: 35.3% and 10.0%, WIC participant: 40.1% and 9.6%, and non-WIC participant: 70.0% and 27.4% (Ryan, 1997).

Power Analysis and Sample Size

The following power analysis was accomplished by estimating the following breastfeeding rates at 8-weeks postpartum. Table 1 Provides an estimation of breastfeeding rates at 8-weeks postpartum.

Table 1. Estimation of Breastfeeding Rates at 8-Weeks Postpartum

Groups:	Still Breastfeeding (Full & Partial)	Not Breastfeeding
Hospital 'A'	60%	40%
Hospital 'B'	40%	60%

A one-tailed hypothesis tests for differences in the proportion of breastfeeding women 8-weeks postpartum between the intervention and routine practice groups in a quasi-experimental design with equivalent groups. The main hypothesis will be tested using Chi-square analysis with the level of significance set to 0.05 and power at 80%.

The determination of sample size sufficient to achieve the stated level of significance and power requires the specification of the difference between proportions expected in each group. A search of the literature has not produced an accurate estimate of expected differences in breastfeeding women 8-weeks postpartum. Without knowledge of the expected differences, it is not possible to determine a sample size sufficient to ensure a specified level of power. The investigator proposes to use conventions developed by Cohen (1988) to estimate effect sizes and, thus, determine sufficient sample size.

It is not the purpose of this study to attach meaning to small, statistically significant differences. The investigator is interested in determining if there are moderate to large differences between groups. Based on estimates proposed by Cohen (p. 184) and power table 6.4.1; the following sample sizes were calculated. Table 2. presents the calculated sample sizes.

Table 2. Calculated Sample Sizes

Effect Size	<i>h</i>	Sample Size per Group
Small	.20	309
Medium	.50	49
Medium/Large	.65	34
Large	.80	19

Under the proposed conditions, a sample size of 34 per group is adequate for the purposes of the study. Recruitment of 34 per group will create a total sample of 68 breastfeeding women. Post hoc power analysis using the medium/large effect size will be conducted for all tests of hypotheses using Cohen's techniques. If power for a test falls below 80%, a discussion of the consequences of low power in tests of hypotheses will be included in the results section of the thesis and appropriate recommendations will be made.

Research Procedures

This study was fully approved by both the MUSC IRB and the IRB Committee for both hospitals prior to initiation of the study. The investigator attended breastfeeding and childbirth classes at both hospitals. At the end of each class, the investigator presented a brief explanation of the study that included the purpose, requirements and inclusion criteria, and requested interested participants to sign up for the study.

Obtaining Consent

Once interested patients were identified, the study, and informed consent was explained in detail and questions were answered. Participants were informed that the focus of the study was to explore the influence of the first breastfeeding experience on the mother's perception of satisfaction and breastfeeding duration. The MUSC IRB approved informed consent form was explained in detail and participant, investigator, and witness signed them.

Additionally the investigator administered a questionnaire to the participants to collect demographic information as well as assess commitment to breastfeeding. Table 3 presents the variables assessed prenatally, in the third trimester, and then at 1 and 8-weeks postpartum. The participants were separated into groups based on the hospital chosen for delivery. For both groups, the participants were asked to record the time the newborn breastfed within the first 2 hours after birth on a breastfeeding study reminder card. Participants were informed that they would be contacted by phone at 1 and 8-weeks after delivery for a short interview to assess satisfaction with breastfeeding, and breastfeeding duration. The prenatal breastfeeding study demographic/commitment survey and postpartum maternal satisfaction/breastfeeding duration questionnaire (1 and 8-weeks postpartum) are included in Appendix B.

Description of the Prolonged Breastfeeding Message

After delivery a nurse trained by the investigator at Hospital 'A' administered the message to the subject immediately after delivery. The message was administered, at the nurse's discretion, only if mother and baby were stable. The mothers were instructed to: "please breastfeed your newborn as long as possible after delivery; breastfeeding should start as soon as possible (immediately) after birth, with proper latch-on and positioning, for at least 20 to 30 minutes on each breast." The usual practice at this hospital was to tell mothers to breastfeed their newborns for as long as the newborn desired; therefore, it was felt that this instruction promoted the usual practice and instruction at this hospital.

Table 3. Variables Assessed Prenatally and at 1 and 8-Weeks Postpartum

Time Assessed	Variable
Third Trimester	Age Marital Status Race Years of Education Family Annual Income When mother decided to breastfeed. Description of commitment to breastfeeding. Length of time planned to breastfeed. Plan to go back to work.
First 2 hours After Birth	Age of newborn at first feeding. Total time of first breastfeeding. Professional (RN) breastfeeding advice and assistance. Maternal feelings at time of breastfeeding. Hospital policy variables: mother-newborn separation, amount of time RNs assisted with breastfeeding, and number of RNs that assisted mother. Maternal satisfaction with RN assistance Maternal satisfaction with first breastfeeding experience.
First 24-hours After Birth	Hospital Policy variables: Number of RNs assisting with breastfeeding, amount of time RNs assisted with breastfeeding, and formula distributed in hospital discharge packages.
1-Week Postpartum	Maternal satisfaction with breastfeeding. Maternal desire to breastfeed another child/recommendation to a friend. Primary emotional support for mother/level of support. Referral to a lactation consultant. Supplementation of newborn's diet: liquids, or formula. Newborn use of pacifier/length of time per day. Ease/difficulty with breastfeeding. Breastfeeding category.

Time Assessed	Variable
8-Weeks Postpartum	<p>Still breastfeeding:</p> <p>Maternal satisfaction with breastfeeding.</p> <p>Maternal desire to breastfeed another child/Recommendation to a friend.</p> <p>Supplementation of newborn's diet: liquids, formula or solids.</p> <p>Newborn use of pacifier/length of time per day.</p> <p>Ease/difficulty with breastfeeding.</p> <p>Breastfeeding category.</p> <p>Length of time planned to breastfeed</p> <p>If baby is weaned:</p> <p>Did mother breastfeed as long as planned.</p> <p>Number of weeks breastfed.</p> <p>Category of breastfeeding at time of weaning.</p> <p>Supplementation with formula, liquids or use of pacifier.</p> <p>Maternal satisfaction with breastfeeding despite weaning.</p> <p>Ease/difficulty with breastfeeding.</p> <p>Maternal desire to breastfeed another child/Recommendation to a friend.</p>

Research Questions and Analysis

Research Question 1

What percentage of mother-newborn dyads were able to breastfeed 40 minutes or more immediately after birth (within the first 1 to 2 hours)?

Independent variables.

Factors contributing to a shortened first breastfeeding.

1. Factors delaying first attempt at breastfeeding (infant age at first feeding): newborn complications, and professional (RN) assistance.
2. Factors negatively influencing the length of time the newborn breastfed: professional (RN) support and advice, maternal feelings of comfort at time of first breastfeeding and hospital policy (maternal and newborn separation).

Dependent variable.

Was newborn able to breastfeed for a prolonged period? Yes or no.

Research Question 2

What are the reasons that women are not able to breastfeed for this length of time (prolonged breastfeeding)?

Descriptive analysis of factors contributing to total length of time newborn breastfed at the first breastfeeding.

Research Question 3

Is a prolonged first breastfeeding positively correlated with an increased duration of full and partial breastfeeding, at 8-weeks postpartum?

Independent variable.

Length of First Breastfeeding.

Dependent variable.

Full or Partial breastfeeding.

1. At 8-weeks postpartum: Still breastfeeding: Yes or no.

A. Breastfeeding Categories:

(1) Full Breastfeeding:

- (a) Exclusive: No other liquid or solid given to infant.
- (b) Almost Exclusive: Vitamins, minerals, water, juice, and rare ritualistic feeds given.

(2) Partial Breastfeeding:

- (a) High: More than 80% of feeds are breastfeeds.
- (b) Medium: 20 to 80% of feeds are breastfeeds.
- (c) Low: Less than 20% of feeds are breastfeeds.

(3) Token Breastfeeding:

- (a) Token: minimal, occasional, irregular breastfeeds.

- B. Length of time planning to breastfeed: 3 – 4 months, 5 – 6 months, 7 - 8 months, 9 – 10 months, 11 - 12 months, over 12 months, 13 – 14 months, 15 - 16 months, 17 - 18 months, 19 – 20 months, 21 – 22 months, 23 – 24 months, over 24 months, as long as baby wants to breastfeed, or undecided.

Research Question 4

Is a prolonged first breastfeeding positively correlated with a maternal perception of satisfaction with the first breastfeeding and at 8-weeks?

Independent variable.

Length of First Breastfeeding.

Dependent variables.

Related to Postpartum Maternal Perception of Satisfaction.

1. First breastfeeding experience:
 - a. Maternal report of satisfaction with first breastfeeding experience: based on score from scale of “extremely satisfied,” “strongly satisfied,” “satisfied,” “neutral,” “dissatisfied,” “strongly dissatisfied,” or “extremely dissatisfied.”
 - b. Report of maternal satisfaction with breastfeeding experience since delivery: based on score from scale of “extremely satisfied,” “strongly satisfied,” “satisfied,” “neutral,” “dissatisfied,” “strongly dissatisfied,” or “extremely dissatisfied.”
 - c. Report of ease of breastfeeding: evaluated as: very easy, easy, neutral, difficult, or very difficult.
 - d. Would the mother breastfeed another child? Evaluated with scale of most definitely, definitely, neutral, most likely not, and definitely not.
 - e. If mother would recommend breastfeeding to a friend: Evaluated with scale of strongly recommend breastfeeding, mildly recommend breastfeeding, remain neutral,

mildly recommend against breastfeeding, or strongly recommend against breastfeeding.

Exploratory Question 1

Is prenatal commitment to breastfeed positively correlated with duration of breastfeeding?

Independent variables.

Prenatal Maternal Commitment to Breastfeed.

1. Report of when decision was made to breastfeed: prior to becoming pregnant, during the first 5 months of pregnancy or after the fifth month of pregnancy.
2. Evaluation of commitment to breastfeed: strongly committed, moderately committed, slightly committed or uncommitted.
3. Length of time planning to breastfeed: less than 1 month, 1 – 2 months, 3 – 4 months, 5 – 6 months, 7 - 8 months, 9 – 10 months, 11 - 12 months, over 12 months, as long as baby wants to breastfeed, or undecided.

Dependent variables.

Breastfeeding Duration at 8-weeks.

1. Still breastfeeding: Yes or no.
2. Amount of breastfeedings baby receives each day; assessment of full, partial and token.
 - A. Full Breastfeeding:
 - (1) Exclusive: No other liquid or solid given to infant.
 - (2) Almost Exclusive: Vitamins, minerals, water, juice, & rare ritualistic feeds given.
 - B. Partial Breastfeeding:
 - (1) High: More than 80% of feeds are breastfeeds,
 - (2) Medium: 20 to 80% of feeds are breastfeeds.
 - (3) Low: Less than 20% of feeds are breastfeeds.

C. Token Breastfeeding:

Token: minimal, occasional, irregular breastfeeds.

D. Full Formula feeding:

3. Further Length of time planning to breastfeed:

Time selected from: 3 – 4 months, 5 – 6 months, 7 - 8 months, 9 – 10 months,
11 - 12months, over 12 months, 13 – 14 months, 15 - 16 months, 17 - 18 months,
19 - 20 months, 21 – 22 months, 23 – 24 months, over 24 months, as long as baby wants
to breastfeed, or undecided.

Exploratory Question 2

Is pacifier use correlated with duration of breastfeeding?

Independent variables.

Use of pacifier, amount of time pacifier used daily.

Dependent variables.

Breastfeeding Duration at 8-weeks.

1. Still breastfeeding: Yes or no.

A. Amount of breastfeedings baby receives each day; assessment of full, partial and
total:

(1) Full Breastfeeding:

(A) Exclusive: No other liquid or solid given to infant.

(B) Almost Exclusive: Vitamins, minerals, water, juice, & rare ritualistic feeds
given.

B. Partial Breastfeeding:

(1) High: More than 80% of feeds are breastfeeds,

(2) Medium: 20 to 80% of feeds are breastfeeds.

(3) Low: Less than 20% of feeds are breastfeeds.

C. Token Breastfeeding:

Token: minimal, occasional, irregular breastfeeds.

D. Full Formula feeding:

Statistical Tests for Evaluation

The Chi-Square nonparametric test will be utilized to evaluate research data. The Chi-Square tests the null hypothesis that two variables are statistically independent; it evaluates categorical data in terms of proportions of cases that fall into various categories. For ordinal research data, a rank-sum test will be utilized to evaluate the data.

The Data Expected

With a prolonged first breastfeed, there is an expected enhanced maternal perception of satisfaction during the first week and at 8-weeks as well as increased rates of full (exclusive and almost exclusive) and partial (high) breastfeeding duration at 8-weeks postpartum. Strong maternal intent to breastfeed positively influences breastfeeding.

Limitations of the Study

Once informed of the study, some mothers may change their behavior since they are in the study, so that they report what they think the investigator wants to find out. The study is dependent on cooperation of nursing staff at both hospitals used for the study. Is enhanced maternal satisfaction related to the Hawthorne effect or truly due to prolonged first breastfeeding? Is resultant maternal satisfaction and duration secondary to prolonged first breastfeeding or due to presence of investigator/participation in a research study? In general, quasi-experimental studies are limited by lack of random assignment of subjects, it cannot be assumed that the experimental and comparison groups are equal at the start of the study. However, with pretest data acquired,

the investigator could determine whether the groups were initially similar and if so, infer that posttest differences are related to the experimental treatment.

Revised Study

The purpose of this research study was jeopardized when data analysis revealed that mothers were unable to breastfeed for a prolonged period after birth. Additionally the sample size was small, only 25% of the original sample size required. As a result of these unforeseen events, the investigator changed the focus and design of the study. With the change in focus, the research questions were changed to: (a) What are the breastfeeding experiences of strongly committed women? (b) What sample size is required to test the hypothesis that a prolonged first breastfeeding positively influences maternal satisfaction and duration of breastfeeding? Since only 17 subjects completed the study, the women delivering at the two hospitals were combined into one group for analysis of the data. Frequency distributions and correlational analysis were used to address the research questions.

CHAPTER IV

FINDINGS

Introduction

This chapter includes a description of the sample and research findings. Data analysis will answer the research questions: (a) What are the breastfeeding experiences of strongly committed women? (b) What sample size is required to test the hypothesis that a prolonged first breastfeeding positively influences maternal satisfaction and duration of breastfeeding?

The Sample

A convenience sample of 35 subjects was recruited from 100 women who attended breastfeeding classes and childbirth classes held at two Southeastern United States hospitals over a 7-month period. Inclusion criteria included: 18 years of age or older, attendance at a breastfeeding or childbirth class, vaginal delivery, planning to breastfeed for the first time, with noninverted nipples, and stable after birth. Infant inclusion criteria included: infant at 37-weeks gestation or more, APGAR score of 7 or above at 5 minutes and RN assessment that newborn was stable after birth.

Of the 35 subjects recruited, 17 completed the study. Eighteen did not complete the study: 10 women had cesarean sections, 1 did not breastfeed until 22 hours after delivery due to resuscitation of the newborn; the remaining 7 delivered after data collection had ended. Initially the study was structured to compare subjects at the two hospitals ($n = 68$); however with the number of completed subjects ($N = 17$), this was not possible. Data collection was initiated at the breastfeeding/childbirth class and related to prenatal commitment to breastfeeding and

demographics. Variables related to breastfeeding duration and maternal satisfaction were collected at 1 and 8-weeks postpartum.

A description of subjects is found in Table 4 (see pg. 62). Subjects who completed the study ranged in age from 22 to 40 years with a mean of 28.7 years. Marital status was predominantly married or cohabitating 16 (94.1%); while 1 (5.9%) was single. Subjects were mostly Caucasian, 15 (88.2%); 2 (11.8%) were African American. Years of education ranged from completion of high school to 18 years; with a mean of 15 years. Family annual income ranged from \$10,000-\$20,000, to over \$100,000, with 2 that did not report income (11.8%). The median family income was \$50,000-\$60,000.

Of this group ($N = 17$), 12 (70.6%) made the decision to breastfeed prior to becoming pregnant, while 5 (29.4%) made the decision during the first 5 months of pregnancy. Fifteen (88.2%) subjects were strongly committed and 2 (11.8%) were moderately committed to breastfeeding prenatally. Further evaluation of commitment was evaluated by asking the women how long they planned to breastfeed. Twelve (70.6%) reported planning to breastfeed between 5-6 months to over 12 months; only 1 (5.9%) planned to breastfeed less than 5-6 months; 2 (11.8%) planned to breastfeed as long as the baby wanted to; and 2 (11.8%) were undecided. No statistically significant associations were found between demographic characteristics of age, years of education and family annual income as compared with prenatal characteristics: when decision made to breastfeed, maternal commitment and length of time planned to breastfeed.

Research Findings

Research Question 1, What are the Breastfeeding Experiences of Strongly Committed Women?

Results are presented over the two time periods, 1-week and 8-weeks postpartum, along with intercorrelations with variables of interest. Table 5 (see pg. 63) presents frequency distributions for selected variables at 1-week and 8-weeks postpartum.

Table 4. Prenatal Breastfeeding Survey: Maternal Characteristics (N = 17)

	Frequency	Percent	Range	Mean
Age			22 - 40 years	28.7 years
Years of Education			12 - 18 years	15 years
Marital Status				
Married/cohabitating	16	94.1		
Single	1	5.9		
Race				
Caucasian	15	88.2		
African-American	2	11.8		
Family-Income		\$50,000 - \$60,000 (median)		
Time Decision Made to Breastfeed				
Prior to becoming pregnant	12	70.6		
During first 5 months of pregnancy	5	29.4		
Commitment to Breastfeed				
Strongly committed	15	88.2		
Moderately committed	2	11.8		
Length of Time Planned to Breastfeed				
3 - 4 Months	1	5.9		
5 - 6 Months	2	11.8		
7 - 8 Months	1	5.9		
9 - 10 Months	1	5.9		
11 - 12 Months	6	35.3		
> 12 Months	2	11.8		
Baby Determined	2	11.8		
Undecided	2	11.8		

Table 5. Frequency Distributions: 1-Week and 8-Weeks Postpartum ($N = 17$)

	Range	Mean	Std. Deviation
First Breastfeeding			
Time first breastfed after birth	5 - 180 minutes	55.8 minutes	54.0
Length of time breastfed in first 2 hours	0 - 30 minutes	12.5 minutes	10.4
Maternal satisfaction with first breastfeeding (1 = Extremely Dissatisfied, 7 = Extremely Satisfied)	1 - 7	5.2	1.7
RN Assistant First 2 hours			
Time RN first assisted with breastfeeding	0 - 60 minutes	15 - 30 minutes	
Length of time RN assisted in first 2 hours	0 - 89 minutes	5 - 9 minutes	
Satisfaction with RN assistance in first 2 hours (1 = Extremely Dissatisfied, 7 = Extremely Satisfied)	1 - 7	4.5	2.0
RN Assistance First 24-Hours			
Length of time RN assisted in first 24-hours	0 - 179 minutes	5 - 14 minutes (29.4 %)	
Satisfaction with RN assistance in first 24-hours (1 = Extremely Dissatisfied, 7 = Extremely Satisfied)	1 - 7	Extremely Satisfied (35.3 %)	
1-Week Postpartum (N=17)			
Satisfaction with breastfeeding (1 = Extremely Dissatisfied, 7 = Extremely Satisfied)	1 - 7	Strongly to Extremely Satisfied (both 41.2 %)	
Breastfeeding Category (1 = Full Exclusive, 7 = Formula Feedings Only)	1 - 7	Full Exclusive (88.2 %)	
Ease/difficulty of breastfeeding (1 = Very Easy, 5 = Very Difficult)	1 - 5	Easy (41.2 %)	
8-Weeks Postpartum (n = 14)			
Satisfaction with breastfeeding (1 = Extremely Dissatisfied, 7 = Extremely Satisfied)	1 - 7	Extremely Satisfied (92.9 %)	
Breastfeeding Category (1 = Full Exclusive, 7 = Formula Feedings Only)	1 - 7	Full Exclusive (50 %)	
Ease/difficulty of breastfeeding (1 = Very Easy, 5 = Very Difficult)	1 - 5	Very Easy (42.9 %)	

Responses: Breastfeeding Experiences During the First Two Hours After Birth

Age of the Newborn at First Breastfeeding

The majority of newborns first breastfed at 1 to 3-hours-of-age. The age of the infant at the initial breastfeeding ranged from 5 to 180 minutes; 6 (35.3%) within 5 to 18 minutes, 4 (23.6%) between 30-50 minutes and 7 (41.2%) between 1-3 hours.

There was a statistically significant, negative, linear correlation between age of newborn at first breastfeeding and satisfaction with professional (RN) assistance ($r = -0.726, p = 0.001$). The sooner after birth the mother was able to start breastfeeding her newborn (earlier age of newborn) the greater satisfaction the mother expressed with professional (RN) assistance. The opposite was true as well; the longer the mother waited to breastfeed her newborn after delivery, the less satisfaction the mother reported with RN assistance (see Figure 2).

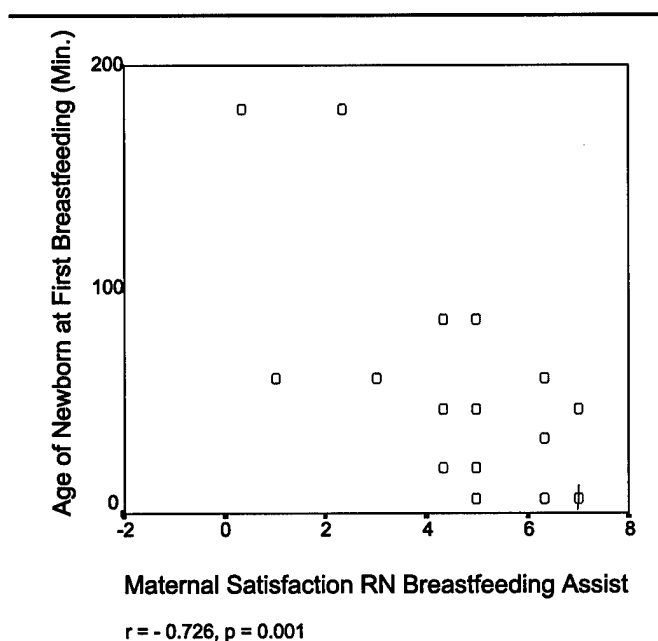


Figure 2. Infant Age & Maternal Satisfaction with RN Assistance First Two Hours
(each petal represents an additional value, 1= ○, 2= ◇ etc.)

Factors Related to a Delay in the First Breastfeeding

Factors related to a delay in the first breastfeeding included newborn complications, hospital policy and professional breastfeeding assistance. Newborn complications included: meconium stained ($n = 1$), cleft lip and palate ($n = 1$), and suspected low blood sugar ($n = 2$), all of which were taken to the nursery immediately for medical evaluation. Of these 4 newborns, 2 were returned to their mothers to nurse at 90 minutes after birth, 1 at 120 minutes, and 1 at 5 hours after birth. Hospital policy and RN staffing, influenced a delay of the first feeding until 3 hours after birth for 1 newborn, the newborn was transferred to the nursery at 30 minutes of age due to RN staffing shortage and inability to assist with breastfeeding. Finally, support provided to 1 mother in the form of RN advice delayed the first feeding until 3 hours after birth when the mother was told not to feed her newborn until after the bath.

Total Time Newborns Breastfed After Birth (During First Two Hours)

Variables related to the total time the newborns breastfed after delivery includes breastfeeding interaction and proximity, and frequent and unrestricted feedings. The first breastfeedings were described as the total feeding time occurring over the first 2 hours after birth. Although the majority of the mothers were strongly committed to breastfeeding; 5 (29.4 %) mothers breastfed 1 minute or less, 5 (29.4 %) mothers breastfed 6 to 12 minutes, 3 (17.7 %) breastfed between 15 to 20 minutes, and 4 (23.5 %) breastfed 25 to 30 minutes total in the first 2 hours after birth. No mothers were able to breastfeed for a prolonged period of time (over 20 minutes per breast).

Factors that May Have Contributed to Decreased Total Time of Newborn Breastfeeding (During First Two Hours)

Factors that may have contributed to the total time of breastfeeding for the first 2 hours after birth includes RN support and advice with first breastfeeding, RN knowledge of breastfeeding, level of comfort of the mother, and hospital policy. Each area is addressed below.

Professional (RN) support and advice.

Support and advice (instruction) provided by the RN, and RN knowledge are both related to hospital practices and protocols. Professional RN advice/assistance and support with the first breastfeeding may play a role in the number of minutes the newborn breastfed. Length of time an RN assisted the mother with the first breastfeeding ranged from 0 to 89 minutes during the first 2 hours after birth. Four (23.5%) stated they had no RN assistance for the first feeding, 7 (41.2%) less than 5 minutes, 4 (23.5%) 5 to 14 minutes, and 2 (11.8%) reported between 20-89 minutes of assistance. Experience and knowledge of the RN can impact the breastfeeding experience, such as by supporting correct methods for positioning/latch-on of the newborn. One mother (5.9%) reported that the RN was not very knowledgeable, so was unable to provide instruction that was helpful. Mothers' reports of RN assistance for the first breastfeeding showed that nearly one-quarter received no assistance, nearly two-thirds received 0 to 14 minutes and the remaining 2 mothers received from 20-89 minutes of assistance.

Maternal feelings at time of breastfeeding.

Mothers' level of specific feelings: pain (comfort), happiness, anxiety, or being tired may have contributed to the length of the first breastfeeding. At the time of the first breastfeeding, mothers reported pain levels: no pain at all, 7 (41.2%); mild pain 3 (17.7 %); moderate pain, 3 (17.7 %); strong pain, 1 (5.9 %); and extreme pain, 1 (5.9 %). Reports of happiness during feeding: extremely, 9 (53 %); strongly 3 (17.7%), mildly or moderately, 2 (11.8 %), and 2

(11.8%) reported none. Mothers stated feeling anxious during the first breastfeeding: not at all, 7 (41.2%); mildly, 3 (17.7%); moderately, 4 (23.5%); and strongly, 2 (11.8%). Mothers reported of being tired at the first breastfeeding: 3 (17.7 %) not at all, 1 (5.9 %) mildly, while 10 (58.9%) reported feeling moderately to extremely tired. At the time of the first breastfeeding, most mothers expressed feeling: no pain or anxiety, extreme happiness, and of being moderately to extremely tired.

Hospital policy.

Hospital policy plays a significant role by establishing the amount of time available to mother and newborn immediately after delivery for bonding and establishment of breastfeeding. The policy of one hospital was to transfer the newborn to the nursery at 1-hour-of-age for newborn admission procedures.

The total time the newborn breastfed during the first 2 hours after birth may have been influenced by professional (RN) advice and support, mother's feelings at the time of breastfeeding, and hospital policy that dictates transfer of newborns to the nursery at a specific time after birth.

Satisfaction of Mothers with Professional (RN) Breastfeeding Assistance in the First Two Hours

How satisfied the mother is with the first breastfeeding may impact the ease of subsequent breastfeedings, and her satisfaction with the breastfeeding relationship. Satisfaction with the professional RN breastfeeding assistance may also impact the continued breastfeeding relationship. Reports of maternal satisfaction with RN breastfeeding assistance within 2 hours of birth: 10 (58.9%) of the mothers were satisfied, strongly satisfied and extremely satisfied; 4 (23.5%) stated being neutral; 1 was dissatisfied, and 1 extremely dissatisfied. One mother did not respond to this as she did not attempt to breastfeed her newborn with RN assist until 3 hours after birth.

Discomfort after a breastfeeding is usually related to improper positioning and/or latch-on. Adequate professional assistance with breastfeeding ideally will prevent improper positioning/latch-on and so will prevent discomfort. Maternal discomfort after the first feeding was reported: 3 (17.7%) not applicable related to minimal amount of suckling, 10 (58.9%) not at all, 3 (17.7%) reported mild discomfort, while 1 reported strong discomfort after the first feeding.

Satisfaction with the First Breastfeeding Experience

Most mothers reported satisfaction with the first breastfeeding experience in spite of delays and brief (short) length of feedings. Twelve mothers (70.7%) reported being satisfied to extremely satisfied with the first breastfeeding experience, 2 (11.8%) stated being neutral, 2 (11.8%) were dissatisfied and 1 (5.9%) extremely dissatisfied with the first breastfeeding experience.

Responses: Breastfeeding Experiences During the First 24-Hours After Birth

Hospital policy influences the mother/newborn dyad's breastfeeding experience, as it may direct the amount of time RNs have to offer breastfeeding support and assistance to a first-time mother.

Total Amount of Time of Professional (RN) Breastfeeding Assistance During the First 24-Hours

Professional support and assistance provided by RN's during this time may have contributed to the mother's breastfeeding experience. Mothers reported the following amount of time of RN support/assist: 8 (47.0 %) less than 15 minutes of support, 5 (29.4%) 15 to 59 minutes of support, 2 (11.8%) 60-89 minutes of support and 2 (11.8%) 90 to 179 minutes of support during the 24-hour period.

The number of RN's assisting breastfeeding mothers over the first 24-hours may influence the mother's understanding of breastfeeding technique and understanding of the breastfeeding relationship. RN instruction can influence correct positioning/latch-on, and maternal confidence

with breastfeeding. One mother (5.9%) stated she had no RN assist in the first 24-hours, 5 (29.4%) reported assist by 1 RN, 5 (29.4%) reported assist by 2 RNs, 5 (29.4%) reported assist by 3 RNs, and 1 (5.9%) was assisted by 4 RNs. The majority of mothers 15 (87.2%) were assisted by 1 to 3 RNs during the crucial first day of the breastfeeding relationship.

Maternal Satisfaction with Professional (RN) Breastfeeding Assistance During the First 24-Hours

Most mothers reported satisfaction with RN assistance over the first 24-hours even though the assistance provided to the majority of these first-time mothers was brief. Twelve (70.7%) mothers reported being satisfied to extremely satisfied; 1 (5.9%) was neutral, and 4 (23.5%) were dissatisfied to strongly dissatisfied.

There was a statistically significant positive correlation ($\rho = 0.683, p = 0.002$) between maternal satisfaction with RN breastfeeding assistance during the first 24-hours and maternal satisfaction with breastfeeding at 1-week postpartum. The more satisfied mothers were with the RN assistance with breastfeeding during the first 24-hours, the more satisfied they were with breastfeeding overall at 1-week postpartum (see Figure 3).

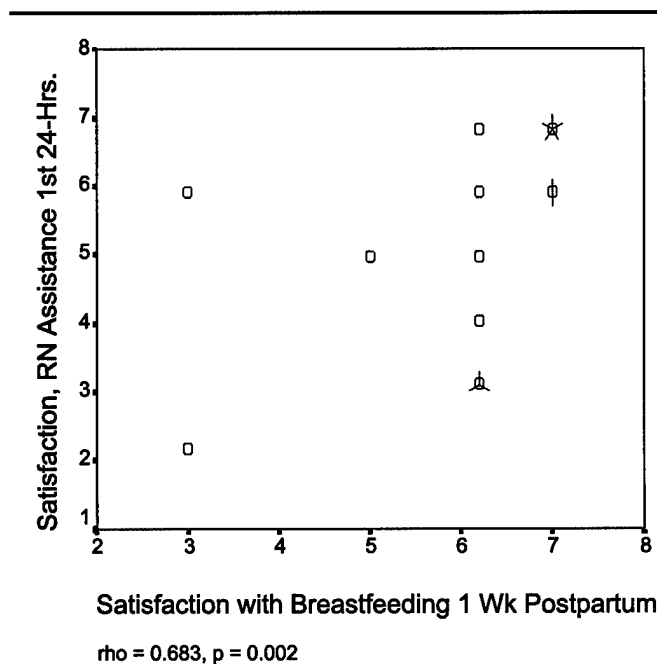


Figure 3. Maternal Satisfaction RN Assistance Breastfeeding 1-Week Postpartum
(each petal represents an additional value, 1= ○, 2= ◻ etc.)

Responses: Breastfeeding Experiences at 1-Week Postpartum

Receipt of Formula in Hospital Discharge Packages

The distribution of formula to new mothers in discharge gift packages is determined by hospital policy. The majority of mothers reported receiving hospital discharge gift packages containing formula. Formula discharge packages were given to 15 mothers (88.4%); 1 (5.9%) mother was unsure; and 1 reported not receiving any formula at discharge. Hospital policy in the two hospitals participating in this study support the distribution of formula to breastfeeding mothers in the form of hospital discharge packages.

Maternal Satisfaction with Breastfeeding at 1-Week Postpartum

The majority of mothers were very satisfied with the breastfeeding relationship at 1-week postpartum. Seven (41.2%) mothers reported being extremely satisfied, 7 (41.2%) reported being

strongly satisfied; 1 (5.9%) was satisfied, and 2 dissatisfied with breastfeeding at 1-week postpartum.

Mother's Desire to Breastfeed Another Child Based on her Breastfeeding Experience at 1-Week Postpartum

The majority of mothers felt a commitment to breastfeeding future children after experiencing breastfeeding for 1-week. Fourteen mothers (82.4%) stated that they would most definitely breastfeed another child; 2 (11.8%) would definitely; and 1 (5.9%) was neutral regarding a future commitment to breastfeeding another child. The majority of the mothers reported satisfaction with breastfeeding and definitely planned to breastfeed another child as well, at 1-week postpartum.

Primary Emotional Support for the Mother/Level of Support

The person providing the most emotional support to the new mother as she provided care to the new baby in the majority of cases was the father of the newborn. Sixteen (94.1%) of mothers reported the father of the baby, in most cases the husband; and 1 (5.9%) mother reported a friend as the individual providing essential emotional support to the new mother. All mothers (100%) reported that the person providing primary emotional support to them was very supportive of breastfeeding.

Ease or Difficulty with Breastfeeding

The majority of mothers expressed that their experience was easy, although a high percentage (> 35%) stated breastfeeding at 1-week postpartum had been mostly difficult. Ten (58.9%) of mothers described their experience as easy to very easy, 1 (5.9%) as neutral, and 6 (35.3%) as difficult to very difficult.

Factors Contributing to the Ease or Difficulty of Breastfeeding

Factors that may have contributed to the ease or difficulty of breastfeeding include: the use of supplemental fluids, such as water, juice, vitamins or minerals or ritualistic feedings such as cheese; formula or use of pacifiers.

Supplementation of newborn's diet with water/juice/vitamins/ritualistic feedings, or formula.

The majority of mothers exclusively breastfed their newborns at 1-week postpartum. Sixteen (94.1%) reported no supplementation; 1 (5.9%) mother reported supplementation with water. Most of the mothers did not use formula to supplement their newborn's diet. Fifteen (88.4%) stated that they did not use formula; 2 (11.8%) of the mothers did use formula to supplement breastfeedings.

Newborn use of pacifier/time used in 24-hours.

The majority of mothers reported newborn use of a pacifier. Ten mothers (58.8%) reported newborns using a pacifier, while 7 (41.2%) stated that their newborn did not use a pacifier at all. Data analysis (t-test) did not show a statistically significant difference between use of newborn pacifier at 1-week and the amount of RN assistance during the 2 hour ($p = .054$) and 24-hour ($p = 0.510$) periods after birth.

Most of the mothers reported offering a pacifier to their newborn for less than 2 hours per day. Of the 10 mothers who reported newborn use of the pacifier, 8 (80%) stated that their newborn used the pacifier less than 2 hours per day, while 2 (20%) reported over 2 hours use per 24-hours.

Breastfeeding Category at 1-Week Postpartum

The mothers predominantly reported exclusively breastfeeding, only 3 reported supplementing the newborn's diet with either water or formula. Fifteen mothers reported full breastfeeding, either exclusive or almost exclusive (with no formula supplementation), and 2

reported partial breastfeeding, medium or low. Full breastfeeding: 14 (82.4%) mothers reported exclusive breastfeeding (no other liquids or solids are given); and 1 almost exclusive (vitamins, minerals, water, or juice rarely given). Partial breastfeeding: 1 mother reported medium breastfeeds (20-80% of feedings are breastfeeds) and 1 low breastfeeds (< 20% of feedings are breastfeeds).

Referral to a Lactation Consultant for Breastfeeding Problems at 1-Week Postpartum

Nearly half of mothers (41.2%) required the assistance of a lactation consultant to remedy difficulties with breastfeeding. Two mothers reported already being followed by the lactation consultant for difficulties, 1 due to newborn suckling difficulties related to cleft lip/palate. At the 1-week postpartum telephone interview, the investigator determined significant problems in 5 (29.4%) of the mothers and referred all to a lactation consultant. Investigator referrals were made for the following problems: 3 (17.7%) of the mothers for latch-on pain/misunderstanding of changing positions; 1 (5.9%) for localized pain in one breast (a probable blocked duct or early mastitis); and 1 (5.9%) for problems with nursing an infant with poor latch-on interest and subsequent lack of maternal milk production.

Responses: Breastfeeding Experiences at 8-Weeks Postpartum

Still Breastfeeding at 8-Weeks Postpartum (n = 14)

At 8-weeks postpartum 14 (82.4%) mothers were still breastfeeding. Three (17.6%) of the mothers had weaned their newborns. Characteristics of the mother/newborn dyads who had terminated the breastfeeding relationship before 8-weeks postpartum will be addressed at the end of this chapter. The responses evaluated for the remainder of this section will be for the 14 mothers who are still breastfeeding (n = 14).

Maternal Satisfaction with Breastfeeding at 8-Weeks Postpartum

At 8-weeks postpartum a greater percentage of the 14 mothers expressed satisfaction with breastfeeding. Thirteen (92.9%) of the 14 mothers still breastfeeding reported being extremely satisfied, 1 (7.1%) reported being satisfied with breastfeeding at 8-weeks postpartum.

Ease or Difficulty with Breastfeeding

Eleven (78.6%) of mothers described their experience as easy to very easy, and 3 (21.4%) as difficult. The mothers ($n = 3$) who expressed difficulty with breastfeeding at 8-weeks postpartum had required and received a moderate amount of RN assistance for the 2 hour and 24-hour periods after birth. For the 3 mothers, the mean category of RN assistance for the 2 hour period was 15 to 19 minutes with a range of 5 to 24 minutes; for the 24-hour period the mean category was 15-29 minutes, the range 15 to 89 minutes.

Factors Contributing to the Ease or Difficulty of Breastfeeding

Factors that may have contributed to the ease or difficulty of breastfeeding include: the use of supplemental fluids, such as water, juice, vitamins or minerals or ritualistic feedings such as cheese; formula, solid foods or use of pacifiers.

Supplementation of newborn's diet with water/juice/vitamins/ritualistic feedings, formula or solids.

At 8-weeks postpartum fewer mothers were breastfeeding exclusively. Eleven (78.6%) reported no supplementation; while 3 (21.4%) mothers reported supplementation with water. The addition of water to the newborn's diet changes the breastfeeding category to almost exclusive.

Most of the mothers did not use formula to supplement their newborn's diet. Ten (71.4%) mothers stated that they did not use formula; 4 (28.6%) of the mothers did use formula to supplement breastfeedings. Addition of formula to the newborn's diet changes the breastfeeding category according to the amount of formula given in relation to breastmilk per day.

The majority of mothers denied adding solids to their newborn's diet. Thirteen (92.9%) of mothers stated giving their newborn no solids, although 1 (7.1%) responded affirmatively, stating that she added cereal to her newborn's nighttime bottle feeding.

Newborn use of pacifier/time used in 24 hours.

The majority of mothers reported newborn use of a pacifier. Eleven (78.6%) mothers reported newborns using a pacifier; 3 (21.4%) stated their newborn did not use a pacifier at all. Data analysis did not show a statistically significant association using a t-test between use of a pacifier at 1-weeks and the amount of RN assistance during the 2 hour ($p = 0.05$) and 24-hour ($p = 0.23$) periods after birth.

The majority of mothers stated that their newborn did not use a pacifier for over 2 hours per day. Of the 11 mothers who reported newborn use of the pacifier, 7 (63.6%) noted that their newborn used the pacifier less than 2 hours per day, while 4 (36.4%) stated their newborn used the pacifier over 2 hours per 24-hours.

Breastfeeding Category at 8-Weeks Postpartum

At 8-weeks postpartum 50.0% ($n = 7$) of mothers reported that they were exclusively breastfeeding. The remaining 7 mothers supplemented their newborn's diet with another liquid or formula; they were placed into three different breastfeeding categories. The full breastfeeding categories included: 7 (50.0%) mothers that were exclusively breastfeeding and 3 (21.4%) that were almost exclusively breastfeeding (supplementation with vitamins, minerals, water, or juice). The partial breastfeeding categories included: 3 (21.4%) that were high partial (over 80% of feedings are breastfeeds) and 1 (7.1%) medium partial (20-80% of feedings are breastfeeds).

The overall percentage of full breastfeeding (exclusively and almost exclusively) decreased from 1 to 8-weeks postpartum, from 15 (88.2%) to 10 (71.4%). At 1-week postpartum 15 (88.2%) had been exclusively breastfeeding; at 8-weeks, 7 (50.0%) were exclusively feeding,

and 3 (21.4%) were almost exclusive, this reflects an increase in supplementation of water, juice, vitamins and minerals for those 3 newborns. In contrast, since fewer mothers offered full breastfeeding to their newborns, they increased formula supplementation. At 1-week postpartum 2 mothers offered partial breastfeeding: 1 medium partial and the other low partial; while at 8-weeks postpartum 4 mothers offered partial breastfeeding, 3 high partial and 1 medium partial.

Length of Time Planned to Continue Breastfeeding

At 8-weeks postpartum, the majority of mothers stated they planned to breastfeed their newborns for 11-12 months. Two mothers (14.3%) stated wanting to breastfeed their newborns for 3-4 months, 5 (35.7%) for 5-6 months, 1 (7.1%) for 9-10 months, and 6 (42.9%) for 11-12 months.

There was a statistically significant positive correlation ($\rho = 0.62, p = 0.02$) between length of time planning to breastfeed in the third trimester, and later at 8-weeks postpartum. It appeared that women who planned to breastfeed for less than or equal to 6 months reached their goal; women whose goal was 11 to 14 months changed to 3-12 months; and women who were undecided or wanted to breastfeed as long as the baby wanted to planned to breastfeed until 11-12 months. Figure 4, below, presents a cross tabulation between length of time planned to breastfeed—third trimester and 8-weeks postpartum; Figure 5 (see pg. 77) offers a scatterplot of length of time planned to breastfeed.

How long do you plan to breastfeed? 8-Weeks postpartum.		3-4 Months	5-6 Months	9-10 Months	11-12 Months	Total
How long do you plan to breastfeed third trimester?	3-4 months	1				1
	5-6 months		2			2
	9-10 months				1	1
	11-12 months	1	2	1		4
	13-14 months				2	2
	as long as the baby wants to breastfeed		1		1	2
	undecided				2	2
Total		2	5	1	6	14

Figure 4. Cross-Tabulation: Planned Breastfeeding Prenatal & 8-Weeks Postpartum

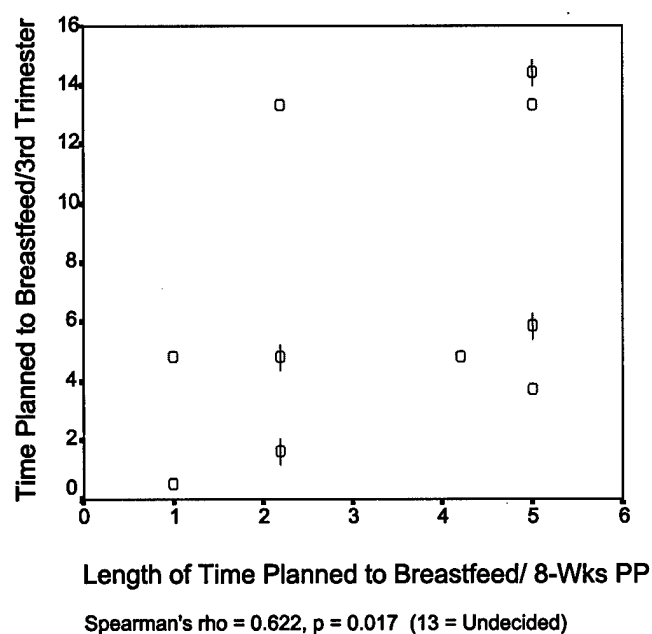


Figure 5. Length of Time Planned to Breastfeed: Third Trimester and 8-Weeks Postpartum (each petal represents an additional value, 1= ○, 2= ⊕ etc.)

Mother's Comments: What Made Breastfeeding a Positive Experience for Them

The majority of mothers stated that the closeness of breastfeeding gave them a great connection to their baby, it enhanced bonding, and it was best for their newborn's health. Responses involved a connected feeling: "closeness," "felt closer to baby," "great bonding," and "connection with baby"; support: "husband's support" and "friend (that breastfed) provided support"; knowledge: "knowing about breastfeeding from class" and "no problems"; newborn's skillful breastfeeding: "baby knew what to do" and "baby takes it well." Other responses were related to simplicity: "easier—no bottles," and "easier than I thought"; health benefits: "good for both of us," "newborn growth," and "the health of the baby"; enjoyment: "enjoyed it," and "not working"; economic: "for economic reasons it's good." 2 mothers reported negative aspects, 1 that "had recurrent mastitis, and had too many conflicting suggestions for management" and "a bit hard going out" when having to breastfeed.

Mother's Comments: What Made Them Decide to Breastfeed for this Length of Time

Mothers overwhelmingly credited breastfeeding for this length of time to the health and nutritional benefits for their newborns. Ten (71.4%) responses referred to breastfeeding being better for baby due to nutritional and health benefits: "it's best for baby," "good for baby," "better for baby," "nutrition of breastmilk," "no formula, don't like since it's not as nutritious," "literature states it's best for baby," and "health benefits." Other responses included: bonding: "bonding benefits"; goals of breastfeeding: wanted to breastfeed for a long time"; "always planned to breastfeed for 1 year"; "goal of breastfeeding for 3 months"; enjoyment: "enjoyed it, so will continue"; economics: "saves money" and simplicity: "ease—no bottles."

Responses: Mothers Who Weaned Their Newborns Before 8-Weeks Postpartum

Did Mothers Breastfeed Newborns as Long as Planned

All of the mothers who weaned their infants before 8-weeks ($n = 3$) stated that they had not breastfed their newborns as long as planned. The mothers stated that they had weaned their newborns at 2, 3 and 4-weeks after birth. The following is a narrative of the breastfeeding experiences of these 3 mothers.

One mother stated that she attempted to nurse her baby at 1 hour after birth, but was unable to get her newborn to latch-on, a problem that continued even at time of discharge. She stated she received no RN assistance with breastfeeding until 5 hours after delivery, but received 2 ½ to 3 hours assistance over the first 24-hour period. She was discharged at just over 24-hours after delivery, and at that time her baby was not latching-on well. The baby developed hyperbilirubinemia at 2 days of age and she was instructed to give her newborn formula feedings for 4 days. At 1-week postpartum she reported being followed by a lactation consultant; she was attempting to breastfeed her newborn first, then offered her child breastmilk via bottle. At 2-weeks when she decided to stop breastfeeding, she was unable to get her baby to latch-on properly, so was pumping and feeding the baby breastmilk via bottle. She stated she was dissatisfied with her first breastfeeding experience, and dissatisfied at 1-week postpartum, and described breastfeeding as very difficult. This mother weaned her newborn at 2-weeks of age; she was pumping and feeding her newborn breastmilk (exclusive category) but could not continue this routine.

Another mother delivered a stable baby with cleft lip and palate. She was able to nurse the baby at the breast for about 6 minutes, but thereafter experienced difficulty. She received outstanding RN assistance: 1 to 1 ½ hours during 2 hours after birth and 1 ½ to 2 hours for the 24-hour period after birth as well as assistance from the lactation consultant. She was encouraged

to use a special cleft lip bottle and began pumping breastmilk for her newborn. At 1-week postpartum she was pumping breastmilk, and feeding it to her baby with the special bottle. She still attempted to get her baby to latch-on without success. She described being neutral as far as satisfaction with her first breastfeeding experience, and being satisfied with breastfeeding at 1-week postpartum despite stating that it had been very difficult. She stated she weaned her newborn at 3-weeks of age, that she pumped and fed her newborn exclusively breastmilk, but that her baby would not latch-on (exclusive category).

The third mother was able to feed her stable newborn for 25 total minutes at when the newborn was 60-minutes of age. She did state that she had no RN assistance for the 2 hour period after birth, and no RN assistance for the first 24-hours after birth. She described that for the first breastfeed that the baby "latched-on well," however, at 1-week postpartum she stated that breastfeeding had not gone well, "hard latch-on, milk not in well, poor letdown." She stated that her baby had been diagnosed as being dehydrated at 4 to 5 days of age, and had been instructed to supplement with formula. She described being strongly satisfied with her first breastfeeding experience, yet dissatisfied at 1-week postpartum; she stated breastfeeding had been difficult at 1-week postpartum. At the time of weaning her newborn at 4-weeks of age; she was pumping, using medication to increase milk supply, but was unsuccessful with latch-on and milk production and fed newborn 1 oz. breastmilk per day (token breastfeeding category).

Mother's Comments: What Made Breastfeeding a Positive Experience for Them

These mothers enjoyed breastfeeding despite difficulties because of the bonding and closeness to baby that it provided. One mother stated that she "felt closer to him," another stated that it was "good for bonding, enhanced bonding." The other mother stated that breastfeeding "never really worked well," she "pumped," and did not express a positive attitude toward breastfeeding.

Maternal Satisfaction with Breastfeeding Despite Early Weaning

Mothers expressed dissatisfaction with the breastfeeding. Two (66.6%) of the mothers described being dissatisfied: strongly dissatisfied and satisfied with their breastfeeding experience, while 1 (33.3%) stated being satisfied.

Ease or Difficulty with Breastfeeding/Factors Related to Difficulty

These 3 mothers described their breastfeeding experience as difficult because of problems encountered. One mother stated that breastfeeding was very difficult (33.3%), and 2 as difficult. Professional (RN) assistance: 1 mother had no RN assistance for first 24-hours, 1 had 1-1/2 hours assistance in the first 2 hours and 1 ½ to 2 hours in the first 24-hours; while the third mother had no RN assistance in the first 2 hours, then 2 ½ to 3 hours during the 24-hour period. All mothers had the assistance of a lactation consultant. All mothers experienced difficulty with their newborn latching-on properly: 1 due to physical problem, cleft lip and palate; 1 mother stated never being able to get newborn to latch-on; and 1 that her newborn latched-on well only at the first breastfeeding and never after that time. All 3 mothers were instructed to feed their newborns with a bottle, 2 with formula within the first week of life as directed by their physicians for diagnoses of: 1 (33.3%) dehydration, 1 (33.3%) hyperbilirubinemia; the baby with cleft lip and palate required a special bottle for feedings of breastmilk. At the time of weaning all 3 newborns used a pacifier, 2 for less than 2 hours per day, and 1 for greater than 2 hours per day.

Overall, these mother/newborn dyads had several things in common that may have negatively affected that breastfeeding relationship: difficulty with newborn latch-on, 2 (66.6%) lack of RN assistance during first 2 hours, use of a bottle for feedings in the first week of life, 2 (66.6%) fed newborn formula, use of a pacifier. All dyads had assistance from a lactation consultant, and 2 mothers received a great deal of RN assistance in the first 24-hours: 1 received 2 ½ to 3 hours and the other 1 ½ to 2 hours.

Commitment to Breastfeeding

Prenatal characteristics of commitment for these 3 women: 2 were strongly and 1 moderately committed; 2 of these women decided to breastfeed prior to becoming pregnant, 1 within first 5 months of pregnancy; and 1 planned to breastfeed 7-8 months, while the other 2 planned to until 11-12 months. Discussion with these mothers at 8-week postpartum phone interview revealed their future commitment/support of breastfeeding: 2 mothers would most definitely breastfeed another child, while the third mother was neutral; and in relation to recommending breastfeeding to a friend, 1 would strongly recommend, 1 would mildly recommend, and 1 would remain neutral. Overall, although these mothers were highly committed to breastfeeding, their difficult experiences negatively influenced their overall view toward breastfeeding.

Research Question 2. What Sample Size is Required to Test the Hypothesis That a Prolonged First Breastfeeding Positively Influences Maternal Satisfaction and Duration of Breastfeeding?

As stated previously, the original purpose of this research study was to determine whether a prolonged first breastfeeding (over 20 minutes per breast) within the first 2 hours after birth influenced maternal satisfaction and duration of breastfeeding. None of the mothers in this study were able to breastfeed for a prolonged period after birth. To determine the feasibility of future study with the original research questions, the variables length of time of first breastfeeding and maternal satisfaction and duration at 8-weeks postpartum were analyzed.

The correlation between minutes breastfed after delivery and breastfeeding category at 8-weeks postpartum showed no pattern of increasing means for category of breastfeeding. So, regardless of the number of minutes breastfed after birth there was varying degrees of breastfeeding by category: weaned to exclusive (see Figure 6 below). Similarly, the correlation

between minutes breastfed during the first 2 hours after birth by scatterplot showed no variability in satisfaction, despite varying breastfeeding times during the first 2 hours.

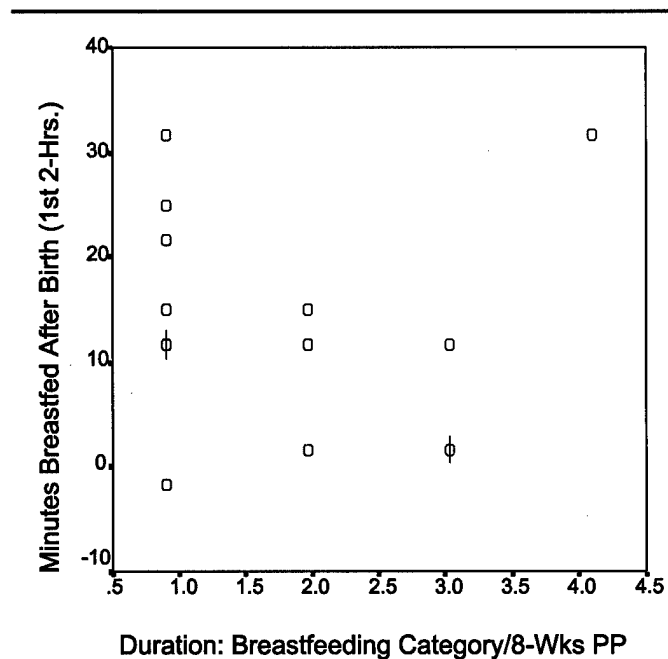


Figure 6. Minutes Breastfed First Two Hours & Breastfeeding Category 8-Weeks Postpartum (each petal represents an additional value, 1= ○, 2= ⊖ etc.)

Figure 7 presents a scatterplot of minutes breastfed after birth and the breastfeeding category at 8-weeks postpartum.

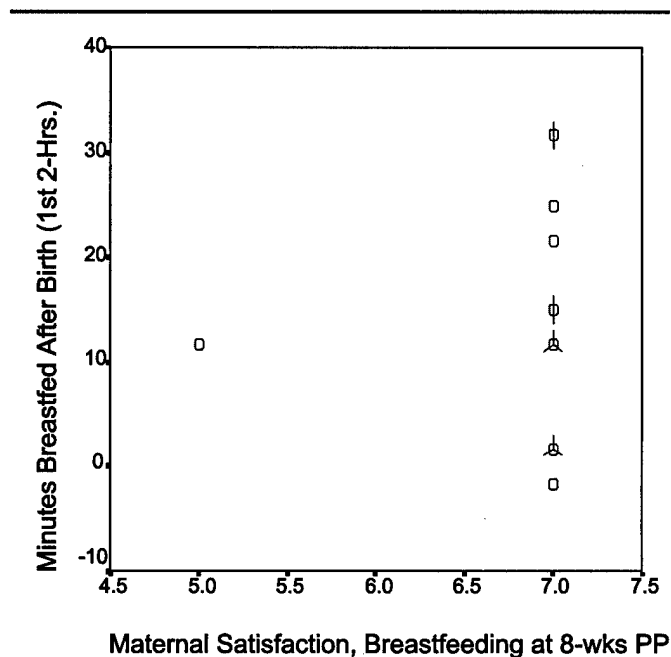


Figure 7. Minutes Breastfed First Two Hours & Maternal Satisfaction at 8-Weeks Postpartum
(each petal represents an additional value, 1= ○, 2= ⊕ etc.)

There is no correlation between length of time of the first breastfeeding (during the first 2 hours) and maternal satisfaction and breastfeeding duration at 8-weeks postpartum, as evidenced by evaluation of scatterplot distribution, and by t-test, ($p = 0.72$). Based on this sample ($N = 17$), there is no correlation so it is not feasible to study this question through future research.

CHAPTER V

DISCUSSION, SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Chapter Five details how the findings relate to those found in the literature as well as the conceptual framework, limitations, study implications and recommendations for practice and future research, conclusions and a summary of the study.

Discussion

The initial purpose of this investigation was to determine whether a prolonged first breastfeeding (over 20 minutes per breast) within the first 2 hours after birth influenced maternal satisfaction and duration of breastfeeding. The investigator wanted to confirm through research what she had previously found through clinical experience, that a prolonged breastfeeding after birth enhanced maternal satisfaction and comfort with the breastfeeding relationship by two days postpartum, prior to discharge. While this study was in progress, two factors changed the focus and the research questions: (a) the inability of any of the mothers to breastfeed for a prolonged period after birth, and (b) the small sample size ($N = 17$). With the change in focus, the research questions were changed to: (a) What are the breastfeeding experiences of strongly committed women? (b) What sample size is required to test the hypothesis that a prolonged first breastfeeding positively influences maternal satisfaction and duration of breastfeeding? Although originally the goal was to recruit ($n = 68$) subjects, 35 were recruited and only 17 subjects completed the study, therefore subjects were evaluated together as one group.

The majority of the mothers in the study ($N = 17$) were women in their twenties to thirties, with a mean age of 28.7 years. The sample was predominantly Caucasian, ($n = 15$), and married or cohabitating ($n = 16$). Years of education ranged from 12 to 18 with a mean of 15 years. Median annual family income was \$50,000-60,000. The group was not representative of the geographic area, but was representative of women who typically breastfeed with regard to age, race, marital status, educational level, and income. (Janke, 1993; Spisak & Gross, 1991). The majority of women ($n = 12$) made the decision to breastfeed prior to pregnancy; pre-pregnancy breastfeeding decisions have been shown to increase duration of breastfeeding (Goodine & Fried, 1984) and results in greater adherence to breastfeeding long-term (Hally et al., 1984).

Research question 1 involved an exploration of the breastfeeding experiences of strongly committed women. A number of variables were assessed. This discussion will focus on the variables that may influence maternal satisfaction and duration of breastfeeding postpartum, and present supportive research literature.

Maternal Satisfaction of the First Breastfeeding ($N = 17$)

Many variables may influence the mother's satisfaction with the first breastfeeding. Variables may include: age of newborn at first breastfeeding, total number of minutes the newborn was able to breastfeed during the first 2 hours after birth; and factors that may have interfered with these variables: professional (RN) breastfeeding support and advice, maternal feelings at time of breastfeeding and hospital policy.

Age of newborn at the first breastfeeding: It is essential that the newborn is offered the first breastfeeding as early as possible after birth, as there is a significant correlation between success in breastfeeding and early initiation of the first breastfeeding (Riordan, 1983). An early first breastfeeding (within 1-2 hours after birth) optimizes: the sensitive period after birth (Kennell, Trause, & Klaus, 1975), and the imprinting effect on mother and newborn (Chute, 1992; Riordan,

1983); the high newborn arousal state (Emde, Swedberg, & Suzuki, 1975); enhanced suckling pressures (Anderson, McBride, Dahm, Ellis & Vidyasagar, 1982; Ellison, Vidyasagar & Anderson, 1979); increases in maternal Prolactin receptors, and thus increase satisfaction with the first breastfeeding which may act as a reinforcer for subsequent breastfeedings (Johnson, 1976). Review of the literature did not provide an association between maternal satisfaction and age of the newborn at the first breastfeeding. An early age of the newborn at the first breastfeeding is positively associated with longer duration of breastfeeding (Salariya, Easton, & Cater, 1978; Taylor, Maloni, & Brown, 1986).

In this study, the age of newborn at the time of the first breastfeeding ranged from 5 to 180 minutes, with a mean of 55.8 minutes. Factors related to a delay in the first feeding included newborn complications ($n = 4$) and hospital policy: RN staffing shortage ($n = 1$), and RN advice ($n = 1$). There was no association between age of newborn at first feeding and maternal satisfaction with the first breastfeeding. Despite delays in the time of the first breastfeeding, the median category of maternal satisfaction with the first breastfeeding was extremely satisfied.

Data analysis revealed a negative correlation between age of the newborn at the first breastfeeding and satisfaction with professional RN assistance ($r = -0.726, p = 0.001$). Essentially, the sooner the mother was able to start breastfeeding her newborn after birth (earlier age of newborn), the greater satisfaction the mother expressed with the RN assistance for the 2 hour period. This finding may offer practice implications to increase maternal satisfaction with RN assistance.

Total time newborns breastfed after birth (during first 2 hours): The importance of a first breastfeeding within the first 2 hours of birth is well supported by the literature; however, no research is available related to length of time of the first breastfeeding. The physiological factors that facilitate the newborn's success with the first breastfeeding within 2 hours after birth is

extremely well documented; it is the investigator's assumption that promoting greater exposure, or a longer feeding, may enhance the success of future breastfeeding in duration and satisfaction. The literature only provides support for unlimited and unrestricted breastfeeding based on demand of the newborn (Howie et al., 1981; Slaven & Harvey, 1981).

In this study, the mean length of time the newborns ($N = 17$) breastfed during the first 2 hours after birth was 12.5 minutes, with a range of 0 to 30 minutes. These were mothers who were predominantly strongly committed to breastfeeding; 29.4% ($n = 5$) breastfed 1 minute or less, 29.4% ($n = 5$) breastfed 6 to 12 minutes, 17.7% ($n = 3$) breastfed between 15 to 20 minutes and 23.5% ($n = 4$) breastfed a total of 25 to 30 minutes after birth. Factors that may have negatively influenced the length of time breastfed: professional (RN) support and advice, maternal feelings at the time of breastfeeding, and hospital policy.

Professional (RN) support and advice: The length of time provided and quality of RN support can influence the success of breastfeeding. The length of time of RN assistance with the first breastfeeding ranged from 0 to 89 minutes, with a mean of 5 to 9 minutes. Four (23.5%) women reported no assistance during this period, and 7 (41.2%) less than 5 minutes. In addition to amount of time the RN assists the mother, the experience of the RN can impact the first breastfeeding experience. One mother in the study (5.9%) reported that the RN was not very knowledgeable, so was unable to offer instruction that was helpful. Providing the new mother with assistance at initiation of breastfeeding is critical to the mother-infant dyad's success with the breastfeeding relationship (Minchin, 1989; Riordan, 1983).

Maternal feelings at time of breastfeeding: Mother's feelings of pain (comfort), happiness, anxiety, or being tired may have contributed to the length of time of the first breastfeeding. The majority of mothers felt no pain at all ($n = 7$), felt extreme happiness ($n = 9$), no anxiety ($n = 7$), and felt moderately to extremely tired ($n = 10$). The influence the level of tiredness may have had

on the length of time the newborn was breastfed was not clear, and wasn't statistically significant. There was no literature found that assessed maternal comfort levels in relation to the first breastfeeding experience.

Hospital policy: Hospital policy factors may have a significant influence on the length of the first breastfeeding. Many hospitals have established policies that regulate the amount of time available to mother and newborn immediately after delivery for bonding and establishment of breastfeeding (Ellis, 1992). A policy of separation is completely opposite from what is recommended in the literature (Kennel et al., 1974; WHO/UNICEF, 1989). Extended maternal-newborn contact after birth for the first couple of hours has been proven to enhance maternal affectionate behaviors (Klaus et al., 1972), increase levels of correct suckling technique (Righard & Alade, 1990), and promote bonding and breastfeeding (Kennel et al., 1974).

The policy at one of the hospitals in the study was to transfer the newborn to the nursery at 1-hour-of-age for newborn admission procedures. The two hospitals were planning in the future to institute changes that would keep mother and baby together after delivery for a longer time period. Since 1974, Kennel et al. recommended changes in hospital practices to promote continuous skin-to-skin contact of the mother and newborn until the first breastfeeding occurs, and completion of newborn care procedures while the newborn is in the mother's arms. Despite recommendations to prevent maternal-newborn separation after birth 25 years ago, hospital policy at times conflicts with interventions that promote breastfeeding. This provides us with opportunities for improvement in our health care facility policies to create an ideal atmosphere supportive of the critical initial period of breastfeeding.

Other variables directly influenced by hospital policy include staffing levels that may impact the availability of RNs to provide lengthy, knowledgeable assistance to mothers during the newborn's first breastfeeding (Powers, Naylor, & Wester, 1994). The breastfeeding knowledge

level of hospital RNs may be a factor of hospital policy, since policy dictates the priority placed on breastfeeding support and staff education.

Maternal satisfaction with the first breastfeeding: The majority of mothers in this study expressed satisfaction with the first breastfeeding despite a less than optimal breastfeeding exposure. Factors influencing satisfaction of the first breastfeeding include: delays before attempting first feeding, short length of feedings, minimal RN assistance with the first breastfeeding, reportedly feeling moderately to extremely tired, and hospital policy in one institution of maternal-newborn separation at 1-hour-of-age for newborn admission procedures. Overall 70.7% ($n = 12$) of the mothers described their satisfaction with the first breastfeeding experience as satisfied to extremely satisfied.

Maternal Satisfaction with Breastfeeding at 1-Week Postpartum ($N = 17$)

Factors that may influence maternal satisfaction with breastfeeding at 1-week postpartum include professional (RN) support and advice during the first 24-hours, breastfeeding category (duration of breastfeeding), ease or difficulty with breastfeeding, and factors effecting ease of breastfeeding such as supplementation with fluids, formula and use of a pacifier.

Professional (RN) support and advice during the first 24-hours: To promote successful breastfeeding for the primipara, health care providers are advised to provide supportive breastfeeding instruction during the first breastfeedings, since they have an imprinting effect and foster successful breastfeeding (Chute, 1992; Riordan, 1983). Eastham, Smith, Poole and Neligan (1976) reported that technical knowledge of breastfeeding was a significant factor and directly impacted duration of breastfeeding. Effective RN support/advice can give a new mother the instruction, encouragement and confidence she needs to successfully breastfeed long-term. During the first 24-hours, the majority 47.0% ($n = 8$) of mothers in this study reported receiving

less than 15 minutes of support, 29.5% ($n = 5$) between 15 to 59 minutes, and 23.6% ($n = 4$) 60 to 179 minutes of assistance.

Maternal satisfaction with RN assistance in the first 24-hours: The majority of mothers reported satisfaction with RN assistance during the 24-hour post-delivery period despite brief intervals of assistance. Most mothers 70.7% ($n = 12$) reported being satisfied to extremely satisfied with RN assistance for this time period. There was a statistically significant correlation between maternal satisfaction with RN breastfeeding assistance during the first 24-hours and maternal satisfaction with breastfeeding at 1-week postpartum ($\rho = 0.68, p = 0.002$). The more satisfied mothers were with the RN assistance received during the first 24-hours, the more satisfied they were with breastfeeding overall at 1-week postpartum. The literature offered no studies that addressed satisfaction with breastfeeding in relation to professional RN breastfeeding assistance.

Ease or difficulty with breastfeeding: The investigator questioned whether the ease or difficulty of breastfeeding would affect the mother's satisfaction with the breastfeeding experience. If the mother felt that breastfeeding was easy, would she be more satisfied with the breastfeeding relationship? The majority 58.9% ($n = 10$) of mothers in this study stated that breastfeeding was easy to very easy; 1 was neutral; and 35.3% ($n = 6$) stated it was difficult to very difficult. Few of the study subjects reported being dissatisfied with breastfeeding at 1-week postpartum, 11.8% ($n = 2$), despite 35.3% ($n = 6$) reporting that breastfeeding was either difficult or very difficult. No literature was found related to the ease or difficulty with breastfeeding and the impact on satisfaction with breastfeeding.

Factors influencing ease of breastfeeding: supplementation and pacifier use: Variables that may contribute to the ease of breastfeeding include adding supplements to the newborns diet, such as water, juice, vitamins, minerals, or formula; or the use of a pacifier. To effectively

promote the breastfeeding relationship, it is recommended that newborns not be given any supplemental fluids, or pacifiers. Supplemental fluids and pacifiers may cause nipple confusion, and decrease breast stimulation which can diminish the milk supply and potentially result in early weaning (Powers, Naylor, & Wester, 1994). Providing fluids such as formula, water, vitamins, juice or other feedings will decrease the milk supply due to decreased breast stimulation and ultimately may decrease the duration of breastfeeding (Goodine & Fried, 1984). The use of an artificial nipple to feed supplements, or in the form of a pacifier can cause nipple confusion and may interfere with the newborn's ability to suckle effectively. Pacifier use greater than 2 hours per day has been associated with breastfeeding problems (Righard & Alade, 1992). Use of supplemental fluids and pacifiers is particularly not recommended during the first weeks after birth when the newborn is learning to properly breastfeed, and the mother is building up her milk supply.

The use of water, juice and especially formula interferes with the supply and demand cycle of breastfeeding and diminishes the crucial nutritional, anti-infective, and anti-allergic properties of breastmilk. In this study, at 1-week postpartum, 94.1% ($n = 16$) reported no water, juice, vitamin, mineral supplementation, and 88.4% ($n = 15$) reported no formula supplementation. Newborn use of a pacifier was reported by 58.8% ($n = 10$); 20% ($n = 2$) reported their newborn using a pacifier greater than 2 hours per day.

Lactation consultant referral: Nearly half, 41.2% ($n = 7$), of mothers required the assistance of a lactation consultant. Two mothers were already being followed by the lactation consultant for breastfeeding difficulties at 1-week postpartum. The investigator identified significant difficulties in 29.4% ($n = 5$) of mothers at 1-week postpartum, and referred them to seek assistance from the lactation consultant. Investigator referrals were made for the following problems: 17.7% ($n = 3$) for latch-on pain/misunderstanding of changing positions, 1 for localized pain in one breast

(probable blocked duct or early mastitis), and 1 for problems with an infant that latched-on poorly to the breast and had subsequent poor maternal milk production. In the literature, 68% of mothers who had one or more contacts with a lactation consultant breastfed their children 4 months or more, compared to women who had no contact who weaned their babies by 2 months (Auerbach, 1985), as cited by Reifsnider and Eckhart (1997).

Breastfeeding category/duration of breastfeeding: Exclusive breastfeeding is recommended for the first 6 months of life, and then to 1 year with the addition of semisolid foods (American Academy of Pediatrics, 1997; Institute of Medicine, 1991; WHO/UNICEF, 1989). Mothers who breastfeed their newborns exclusively (no other liquid or solid supplementation) at 1-week postpartum, are more likely to successfully breastfeed for a longer duration postpartum; compared to mothers who supplement breastfeeding with liquids, in particular formula before breastfeeding is established.

Breastfeeding categories reported by mothers in this study: 82.4% ($n = 14$) reported (full) exclusively breastfeeding; 5.9% ($n = 1$) reported (full) almost exclusive breastfeeding (water, juice, vitamins, or minerals rarely given). Reports of partial breastfeeding category included: One mother stated she provided her newborn with (partial) medium breastfeeding (20-80% of feedings are breastfeeds) and 1 (partial) low breastfeeding (< 20% of feedings are breastfeedings). It is possible that the high rate of exclusive breastfeeding is due to a greater understanding of the breastfeeding process (learned at breastfeeding or childbirth class) and possibly related to the high degree of commitment toward breastfeeding that these women reported prenatally.

Maternal satisfaction with breastfeeding at 1-week postpartum: The majority of mothers reported being satisfied with breastfeeding at this time; 82.4% ($n = 14$) reported being strongly or extremely satisfied. These mothers predominantly reported: receiving less than 15 minutes of RN breastfeeding assistance in the first 24-hours, 47.0% ($n = 8$); yet 70.7% ($n = 12$) reported being

satisfied to extremely satisfied with RN assistance for this time period. As stated above under maternal satisfaction with RN assistance during the first 24-hours, a statistically significant correlation was found between maternal satisfaction with RN breastfeeding assistance in the first 24-hours and maternal satisfaction with breastfeeding at 1-week postpartum ($\rho = 0.68$, $p = 0.002$). The more satisfied the mother was with RN assistance for the 24-hour period, the more satisfied the mother was with breastfeeding at 1-week postpartum. Could this be a variation of the doula support effect? Klaus and Kennell (1997) found that at 6-weeks postpartum, a greater number of doula-supported women were breastfeeding, expressed greater self-esteem, reported a higher regard for their babies and their ability to care for their newborns compared to the control mothers.

Maternal Satisfaction with Breastfeeding at 8-Weeks Postpartum (n = 14)

Maternal satisfaction may be influenced by the following factors at 8-weeks postpartum: ease or difficulty with breastfeeding, and factors effecting ease of breastfeeding such as supplementation with fluids, formula and use of a pacifier, breastfeeding category (duration of breastfeeding), and length of time planned to breastfeed.

Ease or difficulty with breastfeeding: As stated previously, it is expected that a mother having an easy breastfeeding experience would be more satisfied, and a mother experiencing difficulty would likely be dissatisfied. At this time, 78.6% ($n = 11$) reported their experience as easy to very easy, and 21.4% ($n = 3$) as difficult. Despite some reported difficulty, all of these mothers were satisfied with breastfeeding at 8-weeks postpartum: 92.9% ($n = 13$) were extremely satisfied, 7.15 ($n = 1$) was satisfied. Upon reflection on the commitment of these mothers, their reported satisfaction with breastfeeding in the face of difficulties may be related to their strong commitment to breastfeeding.

Factors influencing ease of breastfeeding: supplementation and pacifier use: Variables that may have influenced the ease of breastfeeding include supplementation: fluids and formula, solids and pacifier use. Supplementation of any kind is still not recommended until 6 months of age, see support stated previously under variables of ease of breastfeeding for 1-week postpartum. At 8-weeks, 78.6% ($n = 11$) reported no supplementation, 21.4% ($n = 3$) reported supplementation with water. Use of formula was denied by 71.4% ($n = 10$) mothers; 28.6% ($n = 4$) did report use of formula at 8-weeks. Addition of solids to their newborns diet was denied by 92.9% ($n = 13$) of mothers, 7.1% ($n = 1$) reported that she added cereal to her child's nighttime bottle feeding. The majority of mothers reported using a pacifier, 78.6% ($n = 11$); of these newborns, only 36.4% ($n = 4$) used a pacifier greater than 2 hours per day. When there is supplementation of fluids, formula and solids to the diet of the breastfed newborn, it changes the breastfeeding category from exclusive (only breastfed) to other lower categories and there is a decrease in benefits from breastmilk. Supplementation changes the exclusive breastfeeding category to one of the following; full: almost exclusive (supplementation with liquids, water, juice, vitamins, minerals, or ritualistic feedings), and partial: high, medium, or low (supplementation with formula). Distribution of formula packages at hospital discharge has been linked to a 10% chance of changing from exclusive breastfeeding to partial breastfeeding, and with poor lactation success (Perez-Escamilla, Pollitt, Lonnerdal, & Dewey, 1994).

Breastfeeding category/duration of breastfeeding: As previously stated, exclusive breastfeeding is recommended for a minimum of 6 months, and ideally until 1 year of age (American Academy of Pediatrics, 1997; Institute of Medicine, 1991). Since supplementation of fluids, formula and solids interferes with the breastfeeding process, those mothers who do not use supplements at 8-weeks postpartum will more likely have a greater duration of breastfeeding than those who do supplement. Janke states that breastfeeding success is, "a positive breastfeeding

experience until 4 to 6 months" (p. 28, 1993). Breastfeeding "full" categories (categories by Labbock & Krasovec, 1990), (see Chapter One) reported by mothers were 50.0% ($n = 7$) (full exclusive breastfeeding, and 21.4% ($n = 3$) that almost exclusively breastfed (water, juice, vitamins or minerals rarely given). The remaining 4 breastfeeding "partial" categories were reported: 21.4% ($n = 3$) in the (partial) high category ($> 80\%$ of feedings were breastfeedings), and 7.1% ($n = 1$) in the (partial) medium category (20-80% of feedings are breastfeedings).

Based on the literature, it was determined that breastfeeding at 8-weeks postpartum was a reasonable and good predictor of successful continued breastfeeding. This is supported by Rentschler (1991) who found that the highest failures were at 4 to 6-weeks postpartum; Janke (1997) also noted that 32 to 58% of mothers who weaned changed to bottle feeding by 6-weeks postpartum. At the beginning of this study the investigator decided that breastfeeding categories of full (exclusive and almost exclusive) and partial (high) would be considered successful and indicative of continued breastfeeding, since the majority of feedings that the newborn receives are of breastmilk.

Length of time planned to breastfeed: This study group ($N = 17$) initially showed 100% breastfeeding at time of discharge from the hospital. This is higher than the national average of 59.7% (Ryan, 1995) however it is expected in a group women who planned to breastfeed and were strongly motivated prenatally. In this group ($N = 17$), a decision made in the third trimester was that 70.6% ($n = 12$) planned to breastfeed at least 5-6 months, 11.8% ($n = 2$) planned as long as baby wanted to breastfeed and 11.8% ($n = 2$) were undecided. The literature supports the strength of a prenatal decision to breastfeed; Goodine and Fried (1984) discovered that a decision to breastfeed before pregnancy facilitated a breastfeeding duration of 9.5 months, while a decision made during pregnancy fostered a duration of 7.9 months. In the study group ($N = 17$) 70.6% ($n = 12$) made the decision prior to pregnancy, while 29.4% ($n = 5$) made the decision

during the first 5 months of pregnancy. Based on the Goodine and Fried (1984) study, if this followed with the study group, then 100% would be breastfeeding at 5 to 6 months postpartum.

Other research found that a third trimester decision of intended duration of breastfeeding was the strongest predictor of actual duration (Coreil & Murphy, 1988). In this study, prenatally, 70.5% ($n = 12$) planned to breastfeed for 5 to 6 months or greater, 5.9% ($n = 1$) planned to breastfeed 3 to 4 months, and 23.6% ($n = 4$) either planned to breastfeed as long as the baby wanted to, or were undecided. At 8-weeks postpartum, 17.6% ($n = 3$) had weaned by 2 to 4-weeks, 11.8% ($n = 2$) planned to breastfeed 3 to 4 months, and 70.5% ($n = 12$) planned to breastfeed 5 to 6 months up to 11 to 12 months. For the whole group at 8-weeks postpartum, ($N = 17$) those planning to breastfeed 5 to 6 months or longer reached 70.5 % ($n = 12$), a figure much higher than the national average. According to Ryan (1997), at 6 months, the national average is 21.6% of mothers are breastfeeding. If the study group subjects continue to breastfeed as planned, the 6-month success rate of breastfeeding could be anticipated to be very close to 70.5%, based on the predictive value of continued breastfeeding at 8-weeks postpartum.

Data analysis revealed a statistically significant positive correlation ($\rho = 0.62, p = 0.02$) between length of time planned to breastfeed in the third trimester, and later at 8-weeks postpartum. Evaluation of the data revealed that women who planned to breastfeed for less than or equal to 5 to 6 months reached their goal; women whose goal prenatally was 11 to 14 months changed to 3 to 12 months; and women who were undecided or wanted to breastfeed as long as the baby wanted to prenatally, at 8-weeks planned to breastfeed until 11 to 12 months.

Breastfeeding Experiences of Women Who Weaned Before 8-Weeks Postpartum

All of the mothers ($n = 3$) who weaned did not breastfeed as long as they had planned; 1 had a newborn complication, cleft lip and palate; they weaned their newborns between 2 to 4-weeks-of-age; described their breastfeeding experience as difficult 100% ($n = 3$); and expressed

mostly dissatisfaction with breastfeeding, 66.6% ($n = 2$). These mother/newborn dyads had commonalities that may have negatively influenced the breastfeeding relationship: difficulty with newborn latch-on ($n = 3$); report of lack of RN assistance with breastfeeding during first 2 hours after birth ($n = 2$); and use of a bottle for feedings in the first week of life, 66.6% ($n = 2$) fed newborn formula, and used a pacifier. All dyads had assistance from a lactation consultant, and 2 mothers received a great deal of RN assistance during the first 24-hours, one 2 ½ to 3 hours, and the other 1 ½ to 2 hours. The literature offered several predictors associated with shortened duration of breastfeeding: the extent of mother's technical breastfeeding knowledge (Eastham, Smith, Poole, & Neligan; 1976); proper latch-on of baby to the breast (correct positioning of the infant and correct sucking technique) (Righard, & Alade; 1992); and difficulties with breastfeedings after the first feeding (Wright & Walker, 1983). Wright and Walker (1983) also found that at home use of formula feedings was associated with a reduced prevalence of breastfeeding by 18-weeks. In the literature, 68% of mothers who had 1 or more contacts with a lactation consultant breastfed their children 4 months or more, compared to women who had no contact who weaned their babies by 2 months (Auerbach, 1985), as cited by Reifsnider and Eckhart (1997).

Conceptual Framework

Medical ecology is a new approach in the field of medical anthropology in which health and diseases are seen as indicators of the relationships within a population and of how well the population is adapted to its environment. The medical ecological framework was adapted from McElroy and Townsend (1985) to study the first breastfeeding experience and breastfeeding duration in the mother-newborn dyad. The environment influencing the first breastfeeding experience of the mother-newborn dyad consists of influences from the physical, biological and cultural environments. These three components continuously interact and are interdependent;

changes in one generally affect a change in another. If one component changes significantly, it can lead to an imbalance that could adversely affect the breastfeeding relationship. In this study, it was found that the cultural environment in the form of hospital policy significantly influenced the experience of the mother-newborn dyad.

The Physical Environment

The physical environment influences on the mother/newborn dyad include climate, materials and energy and are significantly influenced by the cultural environment. The age of the newborn at the first feeding and total time of the first breastfeeding affects physical environment climate factors: skin-to-skin contact, and extended/continuous maternal-newborn contact; and is controlled by hospital policy, an aspect of the cultural environment. In this study, the mean time the newborn was able to breastfeed was 55.8 minutes after birth, and average length of time breastfed was 12.5 minutes. The WHO *Ten Steps to Successful Breastfeeding* statement recommends that the first breastfeeding occur within 30 minutes of birth; most of the study mothers were unable to meet this recommendation. Factors causing early newborn transfer to the nursery and therefore delay in first breastfeeding included: newborn complications ($n = 4$); RN short staffing, inability to assist with breastfeeding ($n = 1$); and RN advice to wait until after the bath to breastfeed newborn ($n = 1$). Additionally, the majority of mothers delivered in a hospital requiring transfer of the newborn to the nursery at 1-hour-of-age, so it is clearly seen how policy interferes with the first breastfeeding experience.

Physical factors related to energy include breastfeeding interaction and proximity, breastfeeding immediately after birth, frequent and unrestricted breastfeeding, and correct latch-on and positioning. These variables are dependent on (cultural environment) hospital policy of maternal-newborn separation, which was in force at one hospital at 1-hour-of-age; and of professional (RN) support and assistance that can influence proper latch-on and positioning and

effective breastfeeding. The cultural technology factor of hospital policy is such a significant influence that it can essentially provide for a good or bad experience, depending on local policy.

The Biological Environment

The biological environment includes materials: predators, vectors, food, and pathogens; these do not apply to the mother-newborn dyad in this study. Use of maternal analgesia or anesthesia may have an influence on the newborn's ability to suckle, but was not addressed in this study.

The Cultural Environment

The cultural environment includes ideology, technology and social organization. Cultural environment ideological factors reflect cultural/class influences. The ideological factor of time the decision to breastfeed was made is an indicator of prenatal commitment to breastfeed. In this study, the majority of mothers decided to breastfeed prior to pregnancy; this has been shown to result in increased duration of breastfeeding (Goodine & Fried, 1984). Other ideological factors include higher socioeconomic status of both parents, and higher maternal educational level. The median family income in the study was high, \$50,000-60,000, and the mean educational level as well, 15 years; both are attributes of women who commonly breastfeed (Janke, 1993).

Social organization factors that reflect cultural/family influences include supplementation of formula or liquids and pacifier use. In this study, despite supplementation with formula and water, there was a high rate of exclusive breastfeeding 50.0% ($n = 7$) at 8-weeks postpartum. Pacifier use was common, 78.6% ($n = 11$) of study newborns used a pacifier; of these, only 36.4% ($n = 4$) used a pacifier greater than 2 hours per day, a factor associated with breastfeeding problems (Righard & Alade, 1992).

Cultural environmental technology factors include hospital practices and policies that affect: routine maternal-newborn separation after birth, and professional (RN) breastfeeding assistance and support provided: amount of time offered as well as knowledge level of RN. These factors

impact on the physical climate of the maternal-newborn dyad and were addressed in that section. The cultural technological factor, distribution of formula discharge gift packages is a function of hospital policy. In this study, formula gift packages were given to 88.4% ($n = 15$) of mothers in this study. Distribution of formula at discharge is in violation of the *10 Steps to Successful Breastfeeding* (WHO/UNICEF, 1989). Formula distribution at hospital discharge has been associated with a 10% decrease from exclusive breastfeeding to partial breastfeeding (Ryan et al., 1990), to poor lactation success in primiparas (Perez-Escamilla, Pollitt, Lonnerdal, & Dewey, 1994), and an increase in formula supplementation at 6-weeks postpartum.

Based on the findings of this study, most mothers were unable to initiate a long first breastfeeding within 30 minutes of birth, due to hospital policy (cultural technology environmental factor). In most cases, the breastfeeding was initiated later than 30 minutes after birth, the total time of breastfeeding was short, RN assistance was brief, and lasted from 5 to 9 minutes in the first 2 hours, and maternal-newborn separation occurred to transfer newborn to the nursery for admission procedures. All of these variables are related to hospital policy and influences the quality of the first breastfeeding and potentially affects maternal satisfaction and duration of breastfeeding. Cultural technology factors continued to influence the breastfeeding relationship: brief RN assistance during the first 24-hours, median category 15-29 minutes, and widespread formula discharge package distribution to mothers while in-hospital. Cultural influences on breastfeeding at home were: liquid or formula supplementation [17.7% ($n = 3$) at 1-week, and 50.0% ($n = 7$) at 8-weeks] decreased exclusive breastfeeding, while pacifier use (78.6% ($n = 11$) at 8-weeks) may have contributed to breastfeeding problems.

Limitations

During the course of this study, two unforeseen events occurred. The first was that subjects were unable to breastfeed for a prolonged period of time after birth (the original focus). The

investigator relied on supportive nursing staff to instruct and encourage women at one hospital to breastfeed for a prolonged period of time, at least 20 to 30 minutes per breast. Despite good support from nursing staff, none of the mothers were able to breastfeed for a prolonged period of time. The investigator determined that the focus would change to breastfeeding experiences of these mothers, future research with investigator involvement at time of first breastfeeding would be required to ensure prolonged breastfeedings occurred.

The second problem was that of a small sample size ($N = 17$). Reliability of this study may have been affected by the small sample size. Despite investigator attendance at over 15 breastfeeding and childbirth classes and support from instructors, with greater than 100 attendants; only 35% of mothers volunteered to participate in the study. Thirty-five women volunteered for the study, and 17 completed the study. Eighteen women were excluded from the study because of: cesarean sections ($n = 10$), newborn resuscitation at birth ($n = 1$), and because deliveries occurred after data was collected ($n = 7$). For this small sample size the rate of cesarean sections was high, 36% ($n = 28$).

Generalizability of the results of this study is limited to groups of mothers with similar characteristics, those women who are strongly committed to breastfeeding. Quasi-experimental studies utilizing convenience samples are limited by lack of random assignment. Since the sample size was so small ($N = 17$) generalizability must be applied cautiously to women strongly committed to breastfeeding.

Summary

In this chapter, the investigator presented a discussion of the study, reviewed limitations, discussed findings in relation to the conceptual framework, presented recommendations for practice and research, and offered conclusions. A descriptive study was conducted of 17 women

strongly committed to breastfeeding, to determine factors related to the first breastfeeding that influenced maternal satisfaction and duration of breastfeeding. Data on maternal characteristics was gathered during the third trimester, and phone interviews were conducted at 1 and 8-weeks postpartum to assess variables related to maternal satisfaction and duration of breastfeeding.

There was no statistically significant correlation between length of first breastfeeding and maternal satisfaction or duration of breastfeeding. There were statistically significant results related to maternal satisfaction with RN assistance at 2 hours and age of infant at first breastfeeding, maternal satisfaction with RN assistance at 24-hours and maternal satisfaction at 1-week postpartum, and between third trimester and 8-week postpartum length of time planned to breastfeed.

Conclusions

This descriptive study attempted to answer the following two questions. The research questions are as follows: (a) What are the breastfeeding experiences of strongly committed women? (b) What sample size is required to test the hypothesis that a prolonged first breastfeeding positively influences maternal satisfaction and duration of breastfeeding?

Based on the data analysis, several conclusions are evident. There was no real difference in the maternal satisfaction or duration of breastfeeding based on the total time the newborn breastfed after birth. However, the earlier after birth (age of newborn) the mother was able to breastfeed her newborn, the more satisfied mothers were with RN assistance during the first 2 hours. The more satisfied mothers were with RN breastfeeding assistance during the first 24-hours, the more satisfied they were with breastfeeding at 1-week postpartum.

It is further concluded that length of time planned to breastfeed while in the third trimester is correlated with the length of time planned to breastfeed at 8-weeks postpartum, and is a strong

indicator of actual duration of breastfeeding. Factors that delayed the first breastfeeding included 4 newborns with medical complications, and hospital policy in the form of decreased professional (RN) staffing and RN knowledge. Factors that contributed to a decrease in the total time the newborn breastfed included professional (RN) support and advice, RN knowledge, level of comfort of the mother and hospital policy. Despite nearly three decades of understanding of the importance of the first breastfeeding and all components required to foster its success for the mother-newborn dyad, hospital policy in this study interfered with the breastfeeding process.

Hospital policies of maternal newborn separation at 1-hour-of-age at one hospital, decreased professional (RN) staffing and knowledge impacted the first breastfeeding by influencing the age of the newborn at the first breastfeeding and the total amount of time the newborn was in contact with the mother and breastfed. In this study, despite staff RNs and administrative nursing staff that were extremely supportive of breastfeeding, the process of changing hospital policies and routines that interfered with the breastfeeding relationship was a very slow process.

Recommendations

There are practice implications derived from this research study. As health care professionals, we must strongly support the first breastfeeding. Labor and delivery RNs are in a unique position to encourage breastfeeding immediately after birth (within 30 minutes of birth), by maintaining skin-to-skin contact between mother and newborn for the first 1 to 2 hours after birth and at least until the first breastfeeding has finished. Professional RN support with breastfeeding and assistance to ensure proper latch-on and positioning as well as comfort with breastfeeding during the first 2 hours and the 24-hour period after birth is crucial to successful breastfeeding. The study showed specifically that mothers were more satisfied with RN breastfeeding assistance, the sooner they were able to breastfeed their newborns after birth. To increase maternal satisfaction,

RNs should assist new mothers to breastfeed as soon as possible after delivery. Maternal satisfaction with breastfeeding at 1-week postpartum was greatest if they were also satisfied with RN breastfeeding assistance during the first 24-hours. This implies that RN assistance during both the 2 hour and 24-hour periods strongly influences maternal satisfaction with the breastfeeding relationship. Investigator identification of 29.4% ($n = 5$) mothers with breastfeeding difficulties at 1-week postpartum reinforces the importance of professional (RN) contact with the mother at this time to facilitate management of significant problems and foster continued breastfeeding.

Recommendations for further study include replicating this study using an experimental randomized design with a greater sample size and evaluating aspects of professional (RN) breastfeeding assistance and its influence on maternal satisfaction and duration of breastfeeding. This study highlights the importance of professional RN breastfeeding assistance and its influence on maternal satisfaction. Another question might be to determine whether RN assistance and support influences maternal satisfaction and breastfeeding abilities in a similar manner to the way doulas support women in childbirth, with resulting satisfaction and greater ability to care for their newborn. Utilizing an experimental randomized design would eliminate some of the limitations imposed when using a convenience nonrandomized sample. Other variables that have been studied less frequently may be important to study: immediate postpartum contact; early first breastfeeding; rooming-in; liquid/formula supplementation in-hospital, formula discharge packages distribution; compliance with WHO's *Ten Steps to Successful Breastfeeding*, and routine occurrence of maternal-newborn separation after birth. Focusing the study on women who are uncommitted to breastfeeding may reveal significant findings crucial to initiation of and continued breastfeeding in this population, and may ultimately increase breastfeeding rates nationally, in compliance with the Surgeon General's Healthy People 2000 breastfeeding health objectives.

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APPENDIX A: Informed Consent

HR# 7723

MUSC (ADULT)/Page 1

MEDICAL UNIVERSITY OF SOUTH CAROLINA
INFORMED CONSENT AGREEMENT

I, _____, do hereby consent to participate in a research study.
(Name of participant)

Nurse-Midwife Student, _____ has explained orally to me, as described
(Fill in at time obtain consent)

below, and I fully understand the following:

A. PURPOSE:

I understand that the purpose of this research study is to evaluate the impact of the first breastfeeding experience on my satisfaction with breastfeeding and length of time of breastfeeding. I understand that the research study involves my participation and completion of the following:

1. Informed consent form
2. Prenatal questionnaire (evaluates my commitment to breastfeeding)
3. Recording the number of minutes my baby breastfeeds within the first 1 to 2 hours after delivery
4. Phone interview with the investigator within 1 week after delivery and at 8 weeks after delivery (evaluates my satisfaction with breastfeeding and length of time breastfeeding).

B. PROCEDURES:

I understand that the "inclusion criteria" or requirements for participation, were developed to ensure that only healthy, stable mothers and babies participate in the study. I understand that to participate in the study, I must meet the following "inclusion criteria":

1. Attendance at a breastfeeding or childbirth class at Trident/Summerville Hospitals
2. Delivery at Trident or Summerville Medical Centers
3. 18 years of age or older
4. Pregnant woman planning to breastfeed for the first time (no previous breastfeeding experience)
5. Delivering vaginally (delivering naturally or with forceps or vacuum extractor but not Cesarean section)
6. Delivery at term: 37 or more weeks at time of delivery
7. Nurse's assessment that my baby and I are stable (Apgar score of 7 or above at 5 minutes); additionally I should have non-inverted nipples (inverted nipples can cause difficulties with the first breastfeedings which may present a problem only for the study, not with breastfeeding).

I understand that participation is voluntary and that I can stop at any time without changing my relationship with the nursing staff. I also understand that all information that I give will be kept confidential. The only form my name will be on is the prenatal demographic/breastfeeding commitment questionnaire; it will be placed in a secured box. My name will not be recorded with any other information (interviews) that I provide.

HR# 7723

MUSC (ADULT) Page 2

C. DURATION:

I understand that my participation in this research study depends on how far I am in my pregnancy when I attend the breastfeeding class. Since most women attend the breastfeeding class in the last 2 months of pregnancy and the study extends to approximately 2 months after the date of delivery, the total time of participation will be approximately 4 months.

D. POSSIBLE DISCOMFORTS AND/OR RISKS:

I understand that there is a risk of inconvenience of time for completion of the phone interviews. To decrease my inconvenience, I understand that I may request that the investigator call at a another time that is more convenient.

E. POSSIBLE BENEFITS:

I understand that I may benefit emotionally from discussing my breastfeeding experience with the investigator. I also understand that if after completion of the interview, the investigator identifies a breastfeeding problem, that the investigator will refer me to either a breastfeeding counselor or lactation consultant.

If the study discovers factors that increase success with breastfeeding, they will be published in a nursing or medical journal. Publication of the findings will make this information available to other health professionals; so it can be shared with patients and ultimately make a positive impact on breastfeeding.

F. ALTERNATIVE METHODS:

There are no alternative methods of obtaining this information.

G. COST OF PARTICIPATION:

The participant is not expected to pay anything to participate in the study. There is no financial benefit for participating in the study.

H. EMPLOYEE PARTICIPATION:

I understand that no record of my participation or discontinuation in this study will be a part of my personnel record at either Columbia Trident or Summerville Medical Centers. Also, my participation or discontinuance will not be included as an element of my job performance or evaluation.

HR # 7723

MUSC (ADULT) Page 3

Maria K. Neff (843-760-1893 or 792-2066) has agreed to answer any inquiries that I may have concerning the procedures and has informed me that I may also contact the Medical University of South Carolina Institutional Review Board for Human Research (843/792-4148) directly concerning the research study and research subjects' rights. This Board administers the agreement with the United States Department of Health and Human Services/Office for Protection (OPRR) covering the protection of human subjects (#M-1012).

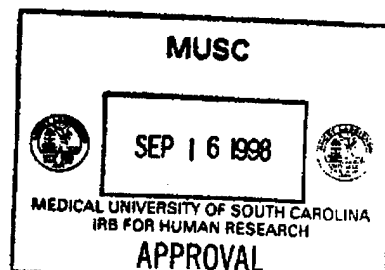
I understand that in the event of any injury directly resulting from the research procedures to me, reasonable medical treatment not otherwise covered by third party payments or study sponsors will be available free through the Medical University (contingent upon approval of the SC Budget and Control Board). Financial compensation is not available for medical treatment elsewhere, loss of work or other expenses. I may contact the Medical University of SC Hospital Medical Director (843/792-3932) concerning medical treatment.

I understand that my records of participation in this study are not accessible to the general public and every effort will be made to maintain confidentiality. However, all records in S.C. may be subject to subpoena by a court of law. Information that may be gained from this study will be used only for research and educational purposes. Information may be published with permission of the principal investigator in medical journals, but my identity will not be revealed. However, identifying information will be available to monitors from the MUSC IRB for Human Research, the sponsor of this study (if applicable), and the US Food and Drug Administration.

It is understood that participation is totally voluntary, and I may choose not to participate. I also understand that I am free to withdraw my consent and discontinue participation at any time. Discontinuation will in no way jeopardize my ability to receive treatment now or in the future at this Institution.

I agree that participation in this study may be terminated by the investigator at any time without regard to my consent if it is felt that this course of action is in my best interest, or if I violate study requirements, or for administrative reasons.

I will receive a copy of this informed consent after it has been read, understood, and signed.

SIGNATURE OF INVESTIGATOR OBTAINING CONSENT_____
SIGNATURE OF PARTICIPANT_____
WITNESS_____
SIGNATURE OF LEGAL GUARDIAN (if applicable)_____
DATE OF CONSENT_____
WITNESS

NR 7713

Breastfeeding Thesis: Scripted Request for Volunteers

Hello, my name is Maria Neff. I am a nurse-midwife student at the Medical University of South Carolina's College of Nursing. To complete my degree, I am doing a research study on breastfeeding. I would like to describe my study briefly, and if you are interested in participating in the study, I request that you please remain for further explanation of the informed consent form and prenatal questionnaire.

The purpose of this research study is to evaluate the first breastfeeding experience and its impact on the mother's satisfaction with breastfeeding and length of time of breastfeeding. The study will involve the following items:

1. Completion of the Informed Consent form . [This will be completed tonight after an explanation and questions are answered, the participant will receive a copy]
2. Prenatal questionnaire (This will be completed tonight, it evaluates demographic information and mother's commitment to breastfeeding).
3. Recorded number of minutes your baby breastfeeds after delivery (on the breastfeeding research study participant form) within the first 1 to 2 hours after delivery.
4. Two phone interviews with the investigator (the first within 1 week after delivery, the second one at 8 weeks after delivery; questions will evaluate mother's satisfaction with breastfeeding and length of time breastfeeding).

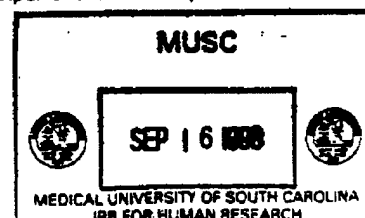
To participate in the study, you must meet the following "inclusion criteria" (inclusion criteria were developed to ensure mother and baby are stable after delivery before breastfeeding, and to eliminate other unusual factors):

1. Attendance at breastfeeding or childbirth class at Trident/Summerville Hospitals
2. Delivery at Trident or Summerville Medical Centers
3. 18 years of age or older
4. Pregnant woman planning to breastfeed for the first time (no previous breastfeeding experience)
5. Delivering vaginally (delivering naturally or with forceps or vacuum extractor but not Cesarean section)
6. Delivery at term: 37 or more weeks at time of delivery
7. Nurse's assessments that both mother and baby are stable. Newborn should have an Apgar score of 7 or above at 5 minutes; additionally the mother besides being stable after delivery, should have non-inverted nipples (inverted nipples can cause difficulties with the first breastfeedings which may present a problem only for the study, not with breastfeeding).

Benefits may include: participants benefiting from talking about their breastfeeding experience with the investigator, and possibly evaluation of breastfeeding difficulties. If during the phone interviews I (as a nurse-midwife student), determine that you may have significant breastfeeding difficulties, I will refer you to seek assistance from a breastfeeding counselor or lactation consultant.

The information obtained in this study will contribute to the present understanding of the breastfeeding process. Evaluating factors that influence the first breastfeeding and impact on mother's satisfaction and length of time breastfeeding will provide information that midwives, obstetricians and physicians can use to improve the breastfeeding experiences of their patients.

For further information please contact Maria K. Neff at 760-1893.



APPENDIX B: Instruments

Prenatal Breastfeeding Study Demographic/Commitment Survey

Please answer the following questions. All information will be kept confidential

Name: _____ Phone Numbers: Home: _____ Work: _____

Other phone numbers/beeper numbers: _____

Other contact person/phone# _____

Address: _____ City _____ SC Zip _____

1. Age: _____ DOB: _____ **Estimated Delivery Date: _____

**Delivering at (circle): Trident or Summerville Hospital

**Will this be your first breastfeeding experience? _____ Yes _____ No

How many children have you delivered? _____

2. Marital Status: (1) _____ Single (2) _____ Married/Co-habiting

3. Race: (1) _____ Native American (4) _____ African American
(2) _____ Hispanic (5) _____ Caucasian
(3) _____ Asian (6) _____ Other, please specify

4. Education: Years School Completed: _____ (High School=12, College Graduate=16, etc.)

Highest Degree Attained: (1) _____ Associate Degree (3) _____ Master's
(2) _____ Baccalaureate (4) _____ Doctorate

5. Family Annual Income:

(1) _____ less than \$10,000	(7) _____ \$60,000 - \$70,000
(2) _____ \$10,000 - \$20,000	(8) _____ \$70,000 - \$80,000
(3) _____ \$20,000 - \$30,000	(9) _____ \$80,000 - \$90,000
(4) _____ \$30,000 - \$40,000	(10) _____ \$90,000 - \$100,000
(5) _____ \$40,000 - \$50,000	(11) _____ over \$100,000
(6) _____ \$50,000 - \$60,000	

6. When did you decide to breastfeed?

(1) _____ prior to becoming pregnant
(2) _____ during the first five months of pregnancy
(3) _____ after the fifth month of pregnancy

7. How would you describe your commitment to breastfeeding?

(1) _____ strongly committed (3) _____ slightly committed
(2) _____ moderately committed (4) _____ uncommitted

8. How long do you plan to breastfeed?

(1) _____ less than one month	(6) _____ 9 - 10 months
(2) _____ 1 - 2 months	(7) _____ 11 - 12 months
(3) _____ 3 - 4 months	(8) _____ over 12 months
(4) _____ 5 - 6 months	(9) _____ as long as baby wants to breastfeed
(5) _____ 7 - 8 months	(10) _____ undecided

Please explain: _____

9. Do you plan to go back to work? (1) _____ Yes (2) _____ No

When do you plan to go back to work? _____

What type of work do you do? _____

How many hours per week will you work? _____

Postpartum Maternal Satisfaction/Breastfeeding Duration Questionnaire (Within 1 week of delivery)

****If any questions are unclear, please ask for clarification!!*******

1. Date of delivery: _____ Hospital: Trident or Summerville DOB: _____ ID# _____
Date of phone interview: _____
2. Delivered by: Midwife/OB/GYN MD/ Family Practice MD/Team/ _____

3. Did you or your baby experience any problems/complications/serious illness prior to delivery, during labor & delivery or after delivery?

(1) _____ no (2) _____ yes
If yes: (1) _____ mother (2) _____ baby

Please describe: _____

4. Did you receive any medications/anesthesia during labor & delivery: yes/no
If yes, explain: _____

5. When did you first breastfeed your baby? _____ How long after birth? _____

6. How long did your baby breastfeed? ____/____ minutes L/R breast

7. During the first 2 hours after birth, at how many minutes after delivery did the first nurse help you with breastfeeding?

(1) _____ first 15 min. (2) _____ 15-30 min. (3) _____ 30-45 min. (4) _____ 45-60 min. (5) _____ other

8. During the first 2 hours after birth, how much time did the nursing staff spend with you, helping you with breastfeeding? (1) _____ less than five minutes (7) _____ 30-39 minutes

(2) _____ 5-9 minutes (8) _____ 40-49 minutes
(3) _____ 10-14 minutes (9) _____ 50-59 minutes
(4) _____ 15-19 minutes (10) _____ 60-89 minutes
(5) _____ 20-24 minutes (11) _____ 90-120 minutes
(6) _____ 25-29 minutes (12) _____ no RN assistance

9. During the first 2 hours after birth, How many nurses helped you?

(1) _____ one (2) _____ two (3) _____ three (4) _____ four (5) _____ other

10. How satisfied were you with the breastfeeding assistance given to you by the nursing staff during the first 2 hours after birth?

(1) _____ extremely satisfied (5) _____ dissatisfied
(2) _____ strongly satisfied (6) _____ strongly dissatisfied
(3) _____ satisfied (7) _____ extremely dissatisfied
(4) _____ neutral

11. A lot of mothers experience many feelings after delivery. At the time of breastfeeding, during the first 2 hours after birth, to what extent did you feel:

Feeling:	1	2	3	4	5
Pain as result of delivery	not at all	mildly	moderately	strongly	extremely
Happiness	not at all	mildly	moderately	strongly	extremely
Tired	not at all	mildly	moderately	strongly	extremely

2

Anxiety not at all mildly moderately strongly extremely

Discomfort after first breastfeeding not at all mildly moderately strongly extremely

Other feeling: _____ mildly moderately strongly extremely

12. How would you describe your satisfaction with your first breastfeeding experience?

- | | |
|-------------------------------|----------------------------------|
| (1) _____ extremely satisfied | (5) _____ dissatisfied |
| (2) _____ strongly satisfied | (6) _____ strongly dissatisfied |
| (3) _____ satisfied | (7) _____ extremely dissatisfied |
| (4) _____ neutral | |

Please explain: _____

13. During the first 24 hours after birth, how much time did the nursing staff spend with you, helping you with breastfeeding?

- | | |
|------------------------------------|--------------------------------------|
| (1) _____ less than five minutes | (7) _____ 120-149 minutes (2-2 1/2) |
| (2) _____ 5-14 minutes | (8) _____ 150-179 minutes (2 1/2-3) |
| (3) _____ 15-29 minutes | (9) _____ 180-209 minutes (3-3 1/2) |
| (4) _____ 30-59 minutes | (10) _____ 210-230 minutes (3 1/2-4) |
| (5) _____ 60-89 minutes (1-1 1/2) | (11) _____ other _____ mins/hours |
| (6) _____ 90-119 minutes (1 1/2-2) | (12) _____ no RN assistance |

14. How many nurses helped you with breastfeeding over the first 24 hours?

- (1) _____ one (2) _____ two (3) _____ three (4) _____ four (5) _____ five (6) _____ other

15. How satisfied were you with the breastfeeding assistance given to you during the first 24 hours by the nursing staff?

- | | |
|-------------------------------|----------------------------------|
| (1) _____ extremely satisfied | (5) _____ dissatisfied |
| (2) _____ strongly satisfied | (6) _____ strongly dissatisfied |
| (3) _____ satisfied | (7) _____ extremely dissatisfied |
| (4) _____ neutral | |

16. Were you given a gift package containing formula at discharge?

- (1) _____ no (2) _____ yes (3) _____ unsure

17. How would you describe your satisfaction with your breastfeeding experience since delivery?

- | | |
|-------------------------------|----------------------------------|
| (1) _____ extremely satisfied | (5) _____ dissatisfied |
| (2) _____ strongly satisfied | (6) _____ strongly dissatisfied |
| (3) _____ satisfied | (7) _____ extremely dissatisfied |
| (4) _____ neutral | |

Please explain: _____

18. Have you experienced breastfeeding as:

- | | |
|---------------------|--------------------------|
| (1) _____ very easy | (4) _____ difficult |
| (2) _____ easy | (5) _____ very difficult |
| (3) _____ neutral | |

Please explain: _____

19. Considering your breastfeeding experience, would you breastfeed another child?

- | | |
|---------------------------|---------------------------|
| (1) _____ most definitely | (4) _____ most likely not |
| (2) _____ definitely | (5) _____ definitely not |
| (3) _____ neutral | |

3

20. Considering your own breastfeeding experience, if a friend asked you about breastfeeding, would you:
 (1)____strongly recommend breastfeeding (4)____mildly recommend against breastfeeding
 (2)____mildly recommend breastfeeding (5)____strongly recommend against breastfeeding
 (3)____remain neutral
21. Are you supplementing breastfeeding with water, juice, vitamins or infrequent "ritualistic" feedings?
 (1)____no (2)____yes
22. Are you supplementing breastfeeding with formula?
 (1)____no (2)____yes
23. Do you give your baby a pacifier? (1)____no (2)____yes
 For how long each day? (1)____< 2 hrs/day (2)____> 2 hrs/day
24. How many breastfeedings does your baby receive each day?_____
25. How many formula feedings does your baby receive each day?_____
 Percentage:_____

26. Breastfeeding Category:

Full Breastfeeding:

- ____(1) **Exclusive:** No other liquid or solid given to infant
 ____ (2) **Almost Exclusive:** Vitamins, minerals, water, juice, rare ritualistic feeds given

Partial Breastfeeding:

- ____(3) **High:** more than 80% of feeds are breastfeeds
 ____ (4) **Medium:** 20 to 80% of feeds are breastfeeds
 ____ (5) **Low:** Less than 20% of feeds are breastfeeds

Token Breastfeeding:

- ____(6) **Token:** minimal, occasional, irregular breastfeeds
 ____ (7) Formula only

27. Who provides primary emotional support to you as you care for your baby?
 (1)____father of the baby (5)____Friend
 (2)____Other male (6)____Other,describe
 (3)____Mother
 (4)____Sister
28. How supportive is this person of your breastfeeding?
 (1)____very supportive (4)____unsupportive
 (2)____supportive (5)____very unsupportive
 (3)____neutral
29. Referral made to breastfeeding/lactation consultant: (1)____no (2)____yes

4

Questions to ask at 8 weeks postpartum: ID# _____

1. Are you still breastfeeding?

- (1) _____ yes (Go to question #2)
 (2) _____ no (Go to question #15)

If you are still breastfeeding:

2. How would you describe your satisfaction with your breastfeeding experience
since our last conversation? (~1 week after delivery)?

- | | |
|-------------------------------|----------------------------------|
| (1) _____ extremely satisfied | (5) _____ dissatisfied |
| (2) _____ strongly satisfied | (6) _____ strongly dissatisfied |
| (3) _____ satisfied | (7) _____ extremely dissatisfied |
| (4) _____ neutral | |

Please explain: _____

3. Have you experienced breastfeeding as:

- | | |
|---------------------|--------------------------|
| (1) _____ very easy | (4) _____ difficult |
| (2) _____ easy | (5) _____ very difficult |
| (3) _____ neutral | |

Please explain: _____

4. Considering your own breastfeeding experience, if a friend asked you about breastfeeding, would you:

- | | |
|--|--|
| (1) _____ strongly recommend breastfeeding | (4) _____ mildly recommend against breastfeeding |
| (2) _____ mildly recommend breastfeeding | (5) _____ strongly recommend against breastfeeding |
| (3) _____ remain neutral | |

5. Are there one or more things that made this a positive experience for you?

6. What made you decide to breastfeed for this length of time?

7. Are you supplementing breastfeeding with water, juice, vitamins or infrequent "ritualistic" feedings?

- (1) _____ no (2) _____ yes

8. Are you supplementing breastfeeding with formula?

- (1) _____ no (2) _____ yes

9. Have you fed your baby any solids? (1) _____ no (2) _____ yes

If yes, please explain: _____

10. Do you give your baby a pacifier? (1) _____ no (2) _____ yes

For how long each day? (1) _____ < 2 hrs/day (2) _____ > 2 hrs/day

11. How many breastfeedings does your baby receive each day? _____

12. How many formula feedings does your baby receive each day? _____

Percentage: _____

13. Breastfeeding Category**Full Breastfeeding:**

- _____ (1) **Exclusive:** No other liquid or solid given to infant
- _____ (2) **Almost Exclusive:** Vitamins, minerals, water, juice, rare ritualistic feeds given

Partial Breastfeeding:

- ☐ (3) **High:** more than 80% of feeds are breastfeeds
☐ (4) **Medium:** 20 to 80% of feeds are breastfeeds
☐ (5) **Low:** Less than 20% of feeds are breastfeeds

Token Breastfeeding:

- ☐ (6) **Token:** minimal, occasional, irregular breastfeeds
☐ (7) Formula only

14. After establishing breastfeeding by 8 weeks, how long are you planning to feed your baby?

- | | |
|--------------------|--|
| (1) 3 - 4 months | (8) 17 - 18 months |
| (2) 5 - 6 months | (9) 19 - 20 months |
| (3) 7 - 8 months | (10) 21 - 22 months |
| (4) 9 - 10 months | (11) 23 - 24 months |
| (5) 11 - 12 months | (12) over 24 months |
| (6) 13 - 14 months | (13) as long as baby wants to breastfeed |
| (7) 15 - 16 months | (14) undecided |

15. If you have weaned your baby:

a. Did you breastfeed for as long as you planned?

- ☐ (1) yes
☐ (2) no

If no, explain: _____

16. How long did you breastfeed? _____ # weeks

17. At the time you decided to stop breastfeeding:

- How many breastfeedings did your baby receive each day? _____
 How many formula feedings did your baby receive each day? _____
 (Percentage? _____; Category Breastfeeding: _____)
 Did you give your baby a pacifier? (1) no (2) yes
 For how long each day? (1) < 2 hrs/day (2) > 2 hrs/day

18. Are there one or more things that made breastfeeding a positive experience for you?

19. What made you decide to breastfeed for that length of time?

20. How would you describe your satisfaction with your breastfeeding experience

- | | |
|-------------------------|----------------------------|
| (1) extremely satisfied | (5) dissatisfied |
| (2) strongly satisfied | (6) strongly dissatisfied |
| (3) satisfied | (7) extremely dissatisfied |
| (4) neutral | |

Please explain: _____

21. Did you experience breastfeeding as:

- | | |
|---------------|--------------------|
| (1) very easy | (4) difficult |
| (2) easy | (5) very difficult |
| (3) neutral | |

Please explain: _____

6

22. Considering your breastfeeding experience, would you breastfeed another child?

- | | |
|-------------------------|-------------------------|
| (1)_____most definitely | (4)_____most likely not |
| (2)_____definitely | (5)_____definitely not |
| (3)_____neutral | |

23. Considering your own breastfeeding experience, if a friend asked you about breastfeeding, would you:

- (1)_____strongly recommend breastfeeding
- (2)_____mildly recommend breastfeeding
- (3)_____remain neutral
- (4)_____mildly recommend against breastfeeding
- (5)_____strongly recommend against breastfeeding

24. Referral made to breastfeeding/lactation consultant: (1)_____no (2)_____yes

APPENDIX C: Letter of Consent

PERSEUS BOOKS GROUP

Basic Books
Civitas Books
Counterpoint Press
Perseus Books
PublicAffairs
Westview Press

April 15, 1999

Maria K. Neff
Student Nurse-Midwife
Medical University of South Carolina
1149 Richardson Drive
Charleston AFB SC 29404

Re: Medical Anthropology in Ecological Perspective by Ann McElroy and Patricia K. Townsend

Dear Maria K. Neff,

You may have our permission for one time use only, in the English language, to use material in the manner and for the purpose as specified in your letter dated April 5, 1999, in your dissertation.

This grant does not extend to use in any medium other than that specifically requested. It does not enable use of said material in a data base, video-disk, or other electronic storage or reproduction system with the exception of a University Microfilms edition.

Full citation must be made with full bibliographic reference as appropriate to the scholarly style of the printed work.

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APPENDIX D: MUSC IRB Approval and Amended Approval Forms

INSTITUTIONAL REVIEW BOARD FOR HUMAN RESEARCH (IRB)
OFFICE OF RESEARCH INTEGRITY (ORI)
MEDICAL UNIVERSITY OF SOUTH CAROLINA
171 Ashley Avenue
Charleston, South Carolina 29425
(Multiple Assurance #M-1012)

STATEMENT OF BOARD:

HR # 7723

This is to certify that the research proposal entitled:

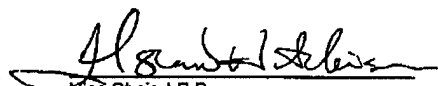
The Impact of the First Breastfeeding Experience on Maternal Satisfaction and Duration of Breastfeeding

and submitted by: NEFF, MARIA K.Department: Nursing

to NO SPONSOR FUNDING for consideration has been reviewed by the IRB and approved with respect to the study of human subjects as adequately protecting the rights and welfare of the individuals involved, employing adequate methods of securing informed consent from these individuals and not involving undue risk in the light of potential benefits to be derived therefrom. No IRB member who has a conflicting interest was involved in the review or approval of this study, except to provide information as requested by the IRB.

Approval Date:

5/20/98


Vice Chair, I.R.B.
Florence N. Hutchison, M.D.

STATEMENT OF PRINCIPAL INVESTIGATOR:

As previously signed and certified, I understand that approval of this research involving human subjects is contingent upon my agreement:

1. To report to the Institutional Review Board for Human Research (IRB) any adverse events or research related injuries which might occur in relation to the human research. I have read and will comply with IRB reporting requirements for adverse events.
2. To submit in writing for prior IRB approval any alterations to the plan of human research.
3. To submit timely continuing review reports of this research as requested by the IRB.
4. To maintain copies of all pertinent information related to the research activities in this project, including copies of informed consent agreements obtained from all participants.
5. To notify the IRB immediately upon the termination of this project, and/or the departure of the principal investigator from this Institution and the project.

MUSC

JUN 25 1998

(PLEASE COMPLETE A SEPARATE FORM FOR EACH OFF-CAMPUS STUDY SITE)

RESEARCH INTEGRITY

Principal Investigator: MARIA K. NEFFStudy Title: The impact of the first breastfeeding experience on maternal satisfaction and duration of breastfeedingSponsor: N/AProtocol #: 7723Off-Campus Study Site: COLUMBIA TRIDENT HEALTH SYSTEMAddress: TRIDENT MEDICAL CENTER SUMMERVILLE MEDICAL CENTER
9330 MEDICAL PLAZA DR. AND 245 MIDLAND PARKWAY
CHARLESTON, SC 29406-9195 SUMMERVILLE, SC 29485

✓ Outpatient Study and/or Inpatient Study

Majority outpatient, small portion completed while participant an inpatient

List the specific study procedures to be done at this site. Specifically describe any invasive procedures proposed.

- Recruitment of participants at Breastfeeding classes
- Will obtain informed consent & completion of demographic/maternal commitment questionnaire
- Recording of the number of minutes breastfed after delivery

Describe the medical facilities at the study site.

TRIDENT MEDICAL CENTER -

Approximately 160 deliveries/mo.

SUMMERVILLE MEDICAL CENTER -

Approximately 30 deliveries/mo.

Does this site have an Institutional Review Board for Human Research? If yes, will this study require review by this Board?

Yes, Trident Health System IRB for Human Research

If the site is the office of a private practitioner, provide the name and description of any other medical facility to be used in case of an emergency (available medical equipment, facilities, and care).

N/A

How will participants be recruited and who will obtain informed consent?

Participants will be recruited at Breastfeeding classes, the principal investigator will obtain informed consent

List all personnel to be involved at this site. Describe their role(s) in the conduct of this study and their qualifications for performing these responsibilities.

Only the principal investigator, Maria K. Neff

What method of instruction is to be provided to those listed above?

N/A

Will a copy of the protocol, approved informed consent, etc. be available at the site?

yes, given to Trident IRB Committee

If an investigational drug is to be used, who will be responsible for supervising for the personnel administering the drug? (Note: This must be either the principal investigator or a co-investigator listed on the #1572.)

N/A

Will the use of other medications be restricted during participation in the study? If yes, please explain.

N/A

What standard operating procedures will be followed for ongoing monitoring of the study (i.e., efficacy, adverse events, patient discontinuation, provision of new information). Include who will report any adverse events and who will be contacted in case of an emergency. Include procedures for problems occurring outside normal working hours.

If any adverse events occur, the principal investigator (PI) will contact both MUSC and Trident IRB officials as dictated by IRB for Human Research Reporting Requirements for Unexpect. / Unanticipated Adverse Events from MUSC & Trident.

What records will be kept at this site and what records will be kept at MUSC. (Medical records, signed informed consents, results of laboratory tests, records of drug administration, etc.)

Signed informed consents and questionnaires will be placed in separate locked boxes in the PI's office.

Who will be responsible for the study records at this site?

PI will pick up form that lists (# of minutes breastfed after delivery) once/twice per week

How will confidentiality of the study records be maintained?

All other study records will be maintained at the PI's office (consent forms, questionnaires). Once data is entered it will be retrieved only if necessary for clarification of data. All data, except consent forms, will be destroyed at the end of the study.

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Additional Endorsements

Re:

The parties signing below agree that all human subjects research conducted by the noninstitutional investigators in conjunction with the the Medical University of SC will be conducted in accordance with DHHS and FDA regulations for the protection of human subjects. Investigators will also comply with any stipulations or requirements of the MUSC's IRB for Human Research. This Agreement is not effective until signed by the Investigator, the NonInstitutional Official, and the IRB Chairperson cited below.

I. Signature of the Noninstitutional Investigator

I will abide by the provisions of this Agreement and by the stipulations of the designated IRB.

Signature: Maria K. Neff Date: 27 MAY '98
 Name: MARIA K. NEFF Title: NURSE-MIDWIFERY STUDENT,
 Office Address: 1149 RICHARDSON DR. MUSC
 HOME CHARLESTON AFB, S.C. 29404
 Phone: (843) 760-1843

II. Signature of Noninstitutional Official

This institution acknowledges the designation of the MUSC's IRB for review and monitoring of the research protocol to be conducted at their facility.

Signature: Richard P. Foster, MD Date: 6/22/98
 Name: RICHARD P. FOSTER, MD Title: VP, MEDICAL MANAGEMENT
 Office Address: 9330 Medical Plaza Dr.
Charleston, SC 29406
 Phone: 803-797-4946

III. Signature of MUSC's IRB Chairman

This institution authorizes the designation of its IRB for review of protocols to be conducted under this Agreement. MUSC's IRB is constituted under OPRR-approved Assurance #M-1012.

Signature: Edward C. Conradi Date: 6/29/98
 Name: Edward C. Conradi, MD Title: Chair
 Office Address: MUSC/ORIRP 501 Bank Bldg.
171 Ashley Ave, Charleston SC 29425
 Phone: 843-792-4148

REQUEST FOR AMENDMENT APPROVAL
MUSC IRB FOR HUMAN RESEARCH (MPA #1012)
(See Instructions on Reverse Side)

MUSC

AUG 28 1998

RESEARCH INTEGRITY

HR# 7723

Protocol/Oncology Group #: _____

PI: MARIA K. NEFFDepartment: CON. NURSE-MIDWIFERY PROGRAMProject Title: THE IMPACT OF THE FIRST BREASTFEEDING EXPERIENCE ON MATERNAL SATISFACTION AND DURATION OF BREASTFEEDING

I. Summarize and justify the requested change(s) below (please print or type):

I AM REQUESTING A CHANGE TO THE INCLUSION CRITERIA FOR PARTICIPANTS IN MY STUDY TO INCREASE THE NUMBER OF PARTICIPANTS DELIVERING AT SUMMERVILLE MEDICAL CENTER. I REQUEST TO CHANGE ITEM #1, AS IN THE INFORMED CONSENT AND SCRIPTED REQUEST FOR VOLUNTEERS TO ALSO INCLUDE: "ATTENDANCE AT CHILDBIRTH CLASSES AT SUMMERVILLE/TRIDENT HOSPITALS. CURRENTLY I HAVE 4 PARTICIPANTS IN MY STUDY PLANNING TO DELIVER AT SUMMERVILLE HOSPITAL, AND 12 FOR TRIDENT. IDEALLY I NEED 34 AT EACH SITE. BY REQUESTING VOLUNTEERS AT THE CHILDBIRTH CLASSES, I HOPE TO INCREASE THE NUMBERS OF THOSE PLANNING DELIVERIES AT SUMMERVILLE.

(Do not attach a copy of the revised protocol - only pertinent pages.)

II. ☒ Yes ☐ No Do changes require REVISION OF CONSENT FORM?If Yes, enclose, but do not staple:An original of the revised consent form and a copy with changes highlighted.☐ Yes ☒ No Do changes require SUBMISSION OF AN ADDITIONAL CONSENT FORM?If Yes, enclose, but do not staple: An original of the additional consent form.

If Yes to either of the questions above, summarize the consent changes below:

INFORMED CONSENT
ITEM B.1. ADD: ATTENDANCE AT A BREASTFEEDING
"OR CHILDBIRTH" CLASS AT TRIDENT/SUMMERVILLE
HOSPITALS.

III. ☐ Yes ☒ No Are changes requested by a STUDY SPONSOR? If Yes, enclose a verification from Sponsor.

Maria K. Neff
Signature of Principal Investigator

28 Aug '98
Date of Submission

APPROVAL RELEASED
SEP 16 1998

☒ Approved by Expedited Review. Reported to OCT - 6 1998 IRB Meeting.

☐ Approved by Full Board at _____ IRB Meeting.

Howard Arslanian Date: SEP 16 1998

(7/1/96)